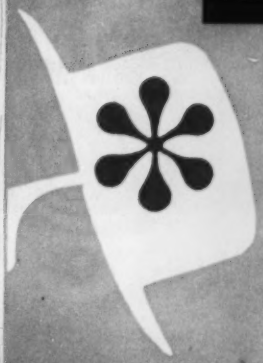
OCTOBER 17, 1955

STEEL
The Metalworking Weekly



Middle Management . . . HOW TO HOLD IT

When he's costing you up to $7000 a year to train, you can't afford to let a budding management man go . . . page 73

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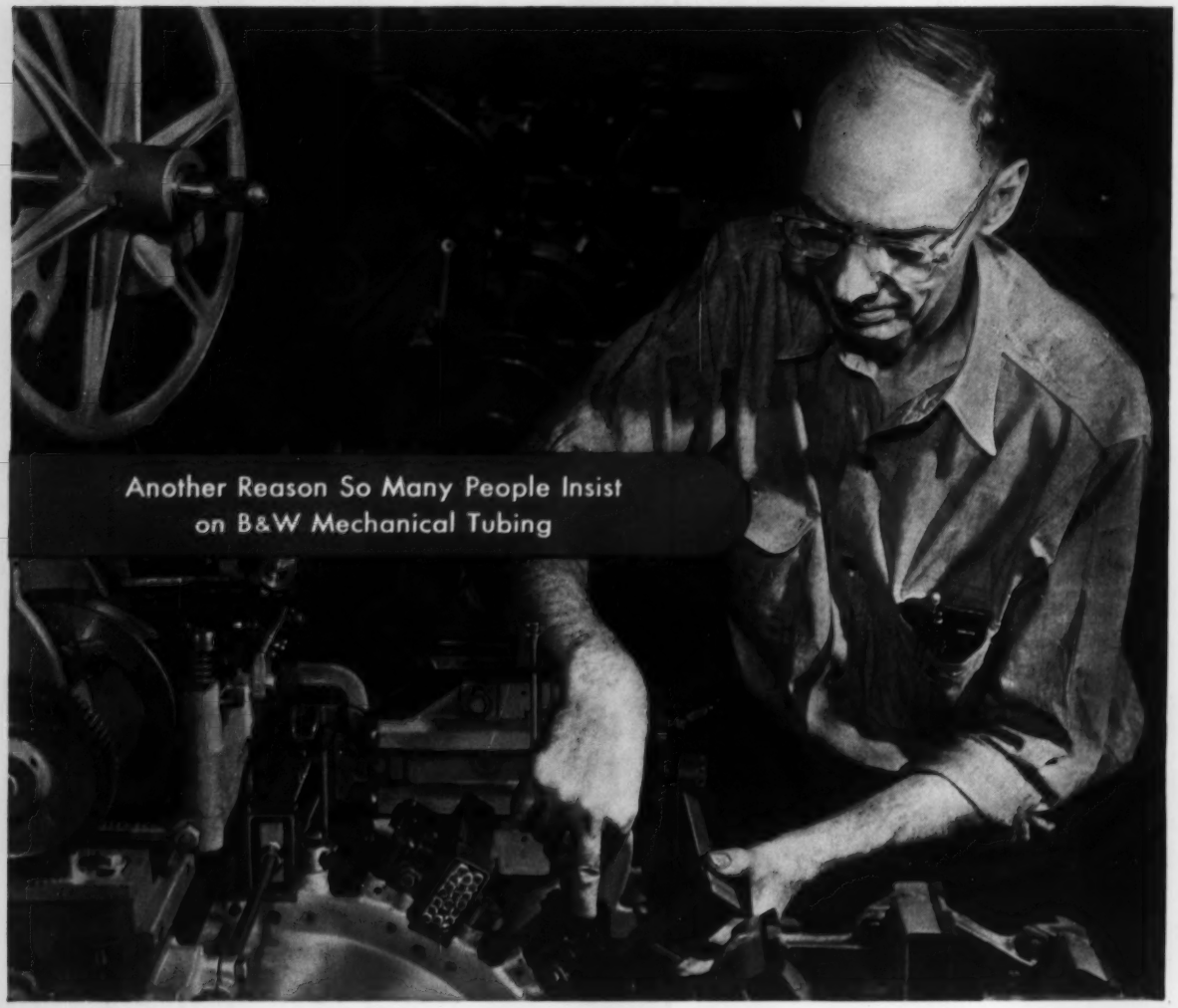


SNUG ARBOR "PUTS THE SQUEEZE" ON CIGARETTES

Smoking pleasure, represented by Viceroys, Kools and Raleighs, is packaged faster than the eye can follow—7500 packs per machine per hour—at the Brown & Williamson Tobacco Co. plant in Louisville, Kentucky.

Heart of the unique packaging machine is the thin metal cigarette arbor, slightly narrower but longer than a cigarette package, perfectly smooth inside and out; strong enough to maintain its shape in use. Cigarettes, pushed through the arbor into the paper pack, expand slightly to make the tight, crisp package so familiar to smokers. Carbon steel arbors, previously used, required considerable time and labor to prevent rust, corrosion and splitting before and during fabrication.

In 1953, Brown & Williamson called in The Babcock & Wilcox Company whose tubing specialists studied the problems and suggested the use of B&W Croloy 18-8S, Type 304, Stainless Steel Mechanical Tubing, supplied in rectangular shape to Brown & Williamson specifications. Rust, corrosion and splitting during fabrication have been eliminated with estimated savings of 15 per cent.

You can "put the squeeze" on your operating time and costs by starting with the *right* B&W Mechanical Tubing —carbon, alloy or stainless—for your requirements. Mr. Tubes, your link to B&W, is ready, willing and able to give you the benefit of his long experience. Or write for Bulletin TB-361 S.

B&W
TUBULAR PRODUCTS DIVISION

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
General Offices: Beaver Falls, Pennsylvania
Plants and Products
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing
Milwaukee, Wis.—Seamless Tubing; Welded Stainless Steel Tubing; Seamless Welding Fittings

TA-5043M

Fine firearms in the making

Like the Yankee gunsmiths of old, firearms makers today are devoted to product excellence. In fact, they are able to turn out weapons to quality standards unheard of in the old days.

A good example is the receiver for a well-known manufacturer's 12-gauge repeating shotgun, which is machined from a 1 1/16 x 2 1/2-in. bar of hot-rolled C-1120 Bethlehem steel.

A few of these receivers are used in making exceptionally fine and costly guns. In the skilled hands of a master engraver they are embellished with intricate scrollwork and beautifully detailed hunting scenes. The assembled guns, truly aristocrats of the sporting world, are highly prized by shooters the world over.

The sporting arms industry is but one of the innumerable active and growing industries whose requirements have created an unprecedented demand for hot-rolled carbon-steel bars. We're doing our best to meet this demand, all the while maintaining the quality standards that our customers expect of products bearing the Bethlehem name.

An engraved receiver of a premium-grade repeating shotgun manufactured by Ithaca Gun Company, Ithaca, N. Y. The ducks are embossed in 24K gold.

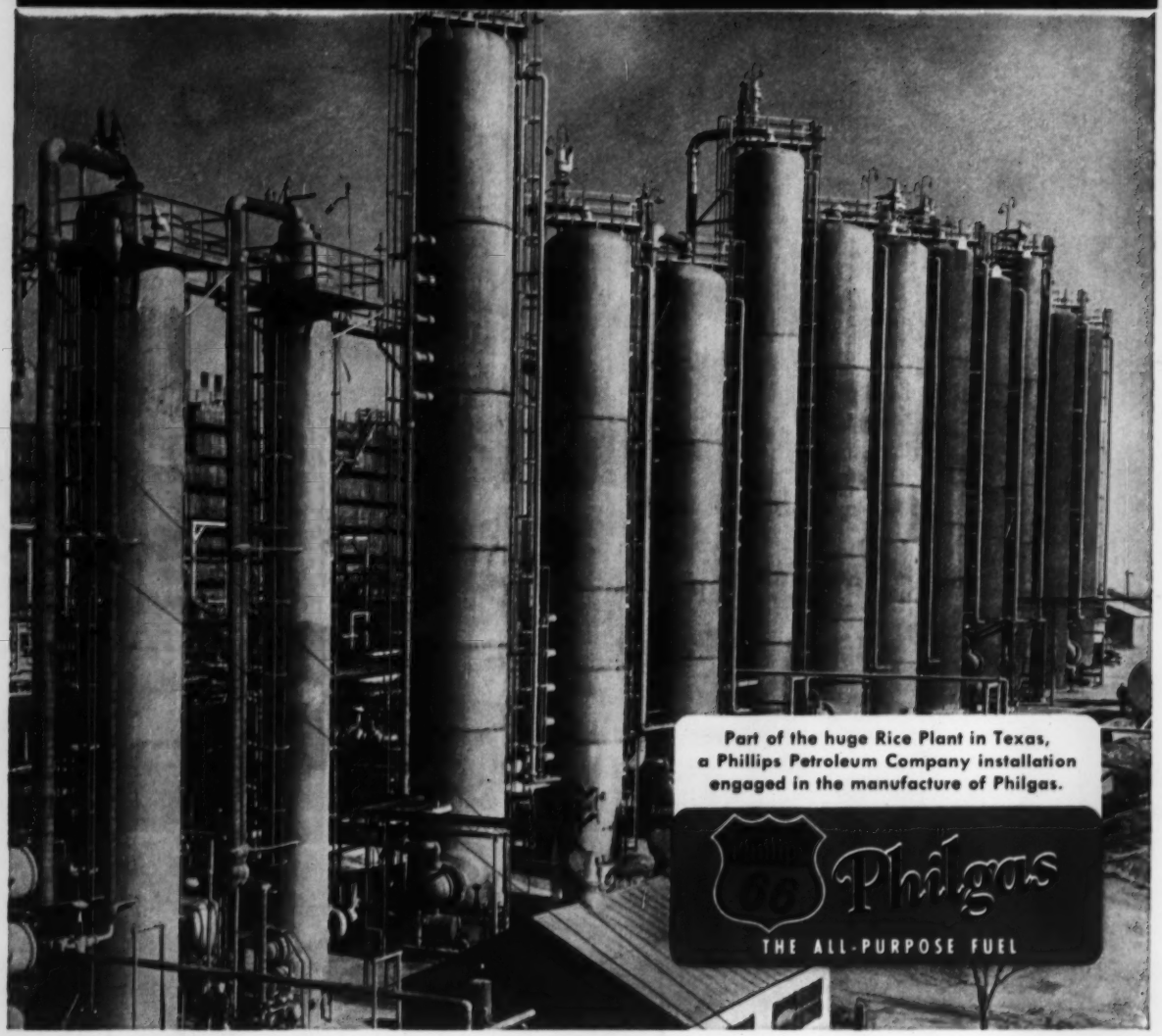
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Philgas® IS AMERICA'S LARGEST SELLING LP-GAS



Part of the huge Rice Plant in Texas, a Phillips Petroleum Company installation engaged in the manufacture of Philgas.

PHILLIPS MODERN MANUFACTURING AND STORAGE FACILITIES ASSURE YOU A HIGH QUALITY PRODUCT

● Phillips modern facilities and strict standards of production are your assurance of the purity, uniformity and high thermal value of Philgas. Phillips vast storage capacity helps assure you of dependable, year-around supply. Phillips also maintains its own fleet of tank cars and trucks to provide prompt deliveries.

Philgas is a clean-burning LP-Gas with uniform thermal values and gravity. It is free from harmful contaminants. With Philgas you can have automatic systems with constant, easily controlled operations. Write for information. Find out why many leading industries are using Philgas to turn out better products and, at the same time, cut operating expenses.

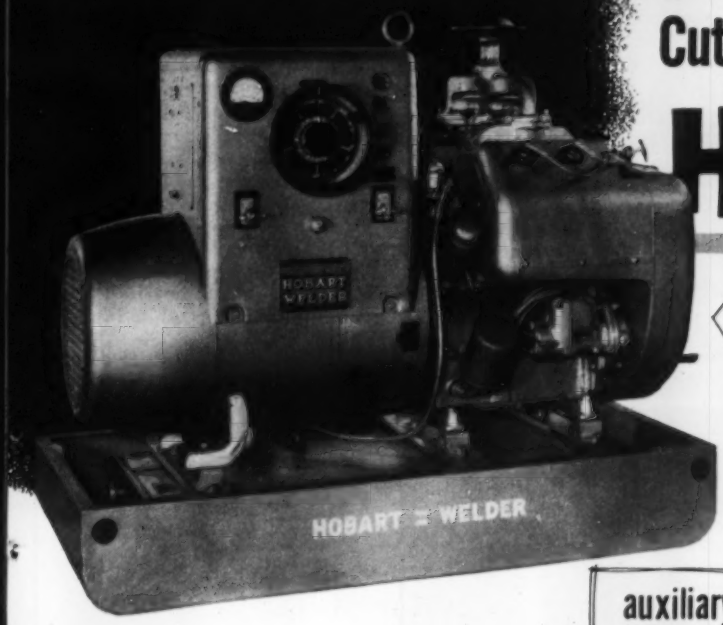
®Philgas is our name for high quality LP-Gas—Bottled Gas—Butane—Propane

PHILLIPS PETROLEUM COMPANY

Sales Department • Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Houston, Tex., Indianapolis, Ind., Kansas City, Mo., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tampa, Fla., Tulsa, Okla., Wichita, Kans.

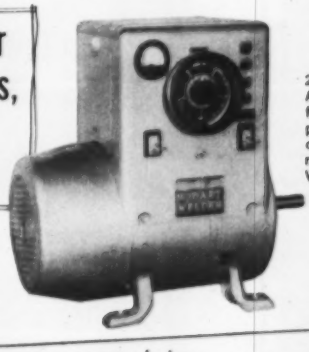
Cut costs quickly...easily with HOBART welders!



New, air cooled engine driven model

Get this 2 in 1 unit on the job so you can weld or have emergency 110/220 power any time, anywhere . . . your men can handle the "extra" jobs—saving you time and money. This rugged, compact and lightweight 200 amp. gas drive welder gets to the job easily and quickly—eliminating costly delays, expensive replacement parts and dismantling. It can be mounted on your truck or trailer or you can choose among several portable mountings.

auxiliary power for motors, tools, etc., plus arc welding



200 or 300 ampere AC power—AC welder for connecting to your own power source. Build your own unit by coupling this model direct, or by means of V belts and grooved pulley.

1. Welds!

Be independent of electric power lines . . . weld anywhere on a moment's notice.

2. Runs tools!

Actually doubles the value of present equipment by providing power when you want it—where you want it.

3. Lights!

110/220 power ready instantly to keep your work moving all the time.

4. Power pumps, paint sprays

. . . motors, tools, grinders, power saws, etc., instantly give you AC current up to 5 KW (5000 watts) to power equipment where no other power is available or as "stand-by" for emergency use in case of power failure.

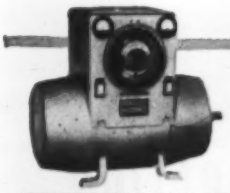
HOBART arc welding speeds up your work in PRODUCTION, MAINTENANCE, CONSTRUCTION and REPAIR

DC RECTIFIER 300 amp. Has three Delta connected transformers . . . magnetic line switch . . . overload protection, plus remote control.

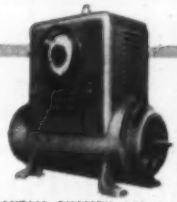
TRANSFORMER WELDERS 180 to 500 amp. models for shops that have only single phase power available. Has a hot, fast, stable arc.

"HUSKY BOY" low investment, light-weight 200 amp. air cooled model for general shop and outside repair work. Easily mounts on truck or trailer. Portable mountings available.

ELECTRIC DRIVE 300 and 400 amp. welders ideal for production, maintenance and repair service. Conservative rating lets you do heavy duty welding for limited periods of time.



GENERATOR ONLY 200 or 300 amp. with 1 KW 110 volt DC power outlet. For "Building Your Own". Just couple direct or V belt it to a good gasoline engine.



"BANTAM CHAMP" 250 amp. welder specially designed for light to medium requirements. Popular for all fabrication purposes in the 200 to 250 amp. class.

"CONTRACTOR SPECIAL" A 250 amp. Gas Drive model that's light and compact . . . yet has plenty of engine power and a hot, fast, dependable arc.

GAS DRIVE WELDERS with 1 or 3 KW DC or 6 or 12 KW AC auxiliary power. 200 to 600 amp. models for speedy, low cost welding in the field where electric power is not available.

You'll Like HOBART Electrodes

Hobart's complete line of electrodes offers you a practical solution to every welding problem. You'll find a size and type best suited to meet your particular requirements. Write for our complete electrode catalog.

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HOBART BROTHERS CO., BOX ST-1051, Troy, O. Phone 21223

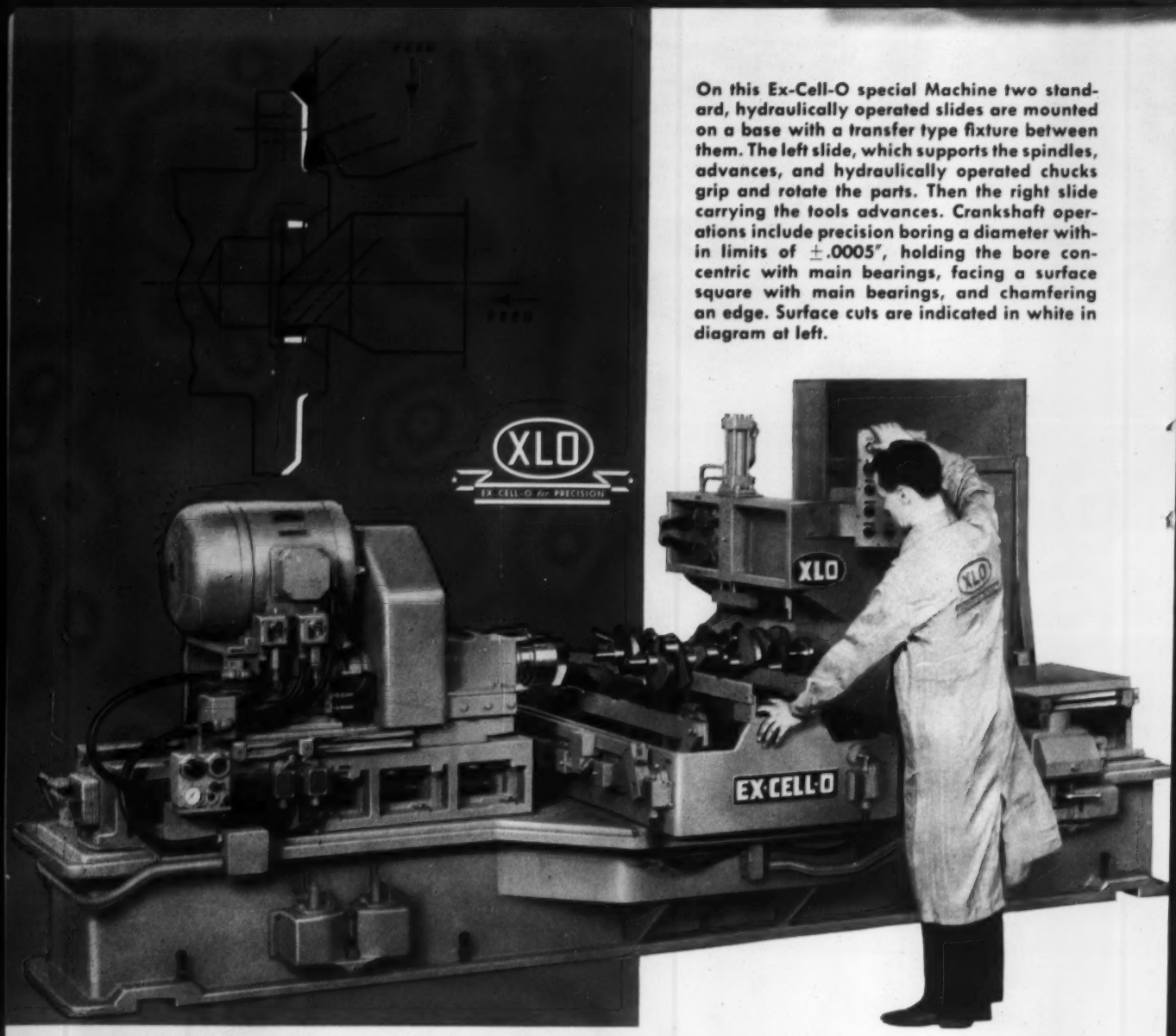
Without obligation, please send me complete details on the items checked: _____ amp. capacity.

☐ Gas drive AC-AC ☐ AC-AC for "Building Your Own"
☐ Rectifier ☐ Transformers ☐ "Husky Boy"
☐ Electric Drives ☐ Generator Only ☐ Bantam Champ
☐ Contractor Special ☐ Gas Drives ☐ Electrode Catalog

NAME _____

ADDRESS _____

CITY _____ STATE _____



On this Ex-Cell-O special Machine two standard, hydraulically operated slides are mounted on a base with a transfer type fixture between them. The left slide, which supports the spindles, advances, and hydraulically operated chucks grip and rotate the parts. Then the right slide carrying the tools advances. Crankshaft operations include precision boring a diameter within limits of ±.0005", holding the bore concentric with main bearings, facing a surface square with main bearings, and chamfering an edge. Surface cuts are indicated in white in diagram at left.

EX-CELL-O Special Machine Bores, Faces 2 Crankshafts SIMULTANEOUSLY

What an improvement!

Automation equipment picks up *two* automotive crankshafts, places them in machining position, bores, faces and chamfers the flange ends simultaneously, and transfers them to the unloading position *all in one automatic cycle.*

Building special purpose machines is an Ex-Cell-O forte. Manufacturers with problems in accuracy, production, and in combining numerous operations, look to Ex-Cell-O.

In return for this confidence Ex-Cell-O builds them special machines which quickly pay for themselves through substantial production increases, improved quality, and reduced unit costs.

Whatever your plans for greater, more economical production, they can be materialized at Ex-Cell-O. Your Ex-Cell-O representative will be happy to discuss them with you.

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

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STEEL
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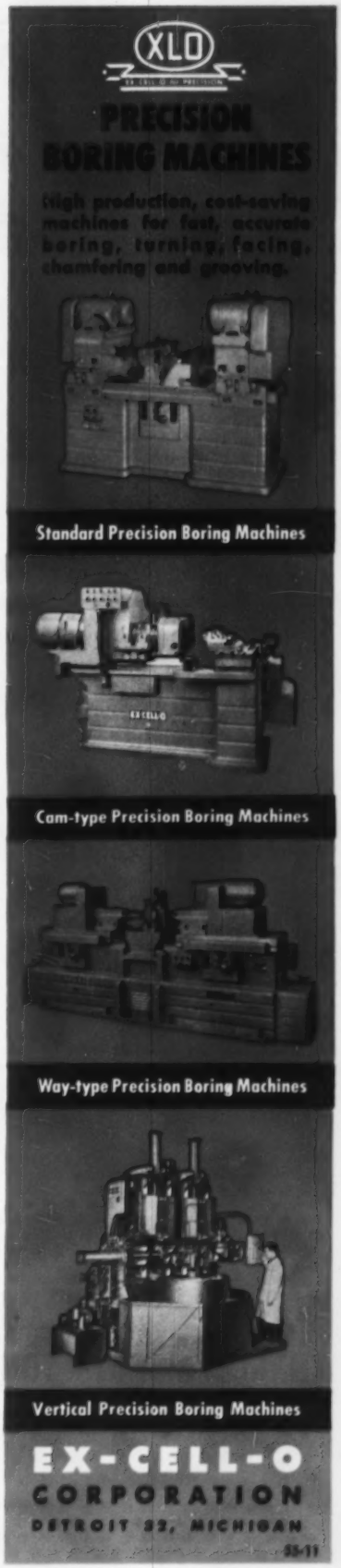

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behind the scenes

Instructive Reading

The most read column in STEEL is Metalworking Outlook. Every survey shows it leading the list; every investigation of our readers' reading habits reveals that it draws them like a magnet. Why so much interest? We approached Assistant Managing Editor John Morgan, and put the question right to him. "What's so hot about Metalworking Outlook? A body would think it carried selected excerpts from *Esquire*."

By a remarkable coincidence, it turned out John is the author of Metalworking Outlook. An investigator couldn't ask for a better break than that. Moreover, he was willing to talk.

The column has an ancestor (it was called Present, Past and Pending). Even if nothing more had been done to it, the killing of the title alone would have rated a cheer. As it gradually shook down into its present form, John found himself with more material than space. STEEL's editorial staff, the largest of any business publication, is under standing orders to contribute all the news it can uncover that is in the province of metalworking. Add to this the flood of mail that pours into STEEL's editorial offices every day, and you come up with a respectable pile of information.

John has to wade through this material, select nine items, plus enough hints, to cook up a weekly prophecy. When you consider that he is obliged to examine more than 400 pertinent items a week and boil them down to less than a dozen, it is evident that his judgment gets a workout. Indeed, the screening and presentation of this capsule information represents a real editorial job—and a real service to busy readers.

Please Be Advised

While we're on the subject of editorial digestion, it might be appropriate to mention the ruin that is creeping through business English. Herbert C. Morton, professor of business administration at Dartmouth, is convinced that all of us can improve our correspondence if we eliminate cliches and jargon. He mentions specifically—and you can recall many more: "Yours of the 14th inst. received and contents noted;" "we beg to state;" "your humble servant." The list is as long as your arm (and mine).

Prof. Morton is amazed to reflect that some persons take so little pride in writing concise letters. In business establishments, he said, too often a letter writing job falls to the person who happens to be nearest, and, behold, cliches and jargon get a new lease on life.

"Don't use more words than you need to convey your thought," he advises. "Don't use big words and technical terms when everyday words will do. Write to *express*, not to *impress*."

Live Bargains

Here's a little philosophy with a sarcastic slant. It turns up every so often in house organs, blotters, mailing pieces and souvenir cards. The prices vary with the times:

A live man pays 50 cents for a shave.
A dead man pays $5.
A woolen overcoat costs $50.
A wooden one costs $500.
A live man pays $2 for a taxi.
A dead man pays $50.

Moral: Stay alive and save money.

Poets' Corner

A recent challenge to compose the fifth line of a limerick that would give even Ogden cause to gnash his teeth elicited some rather spirited jottings—most of them unprintable. Hats off to Mrs. A. W. Simmill, Millburn, N. J., for keeping it clean.

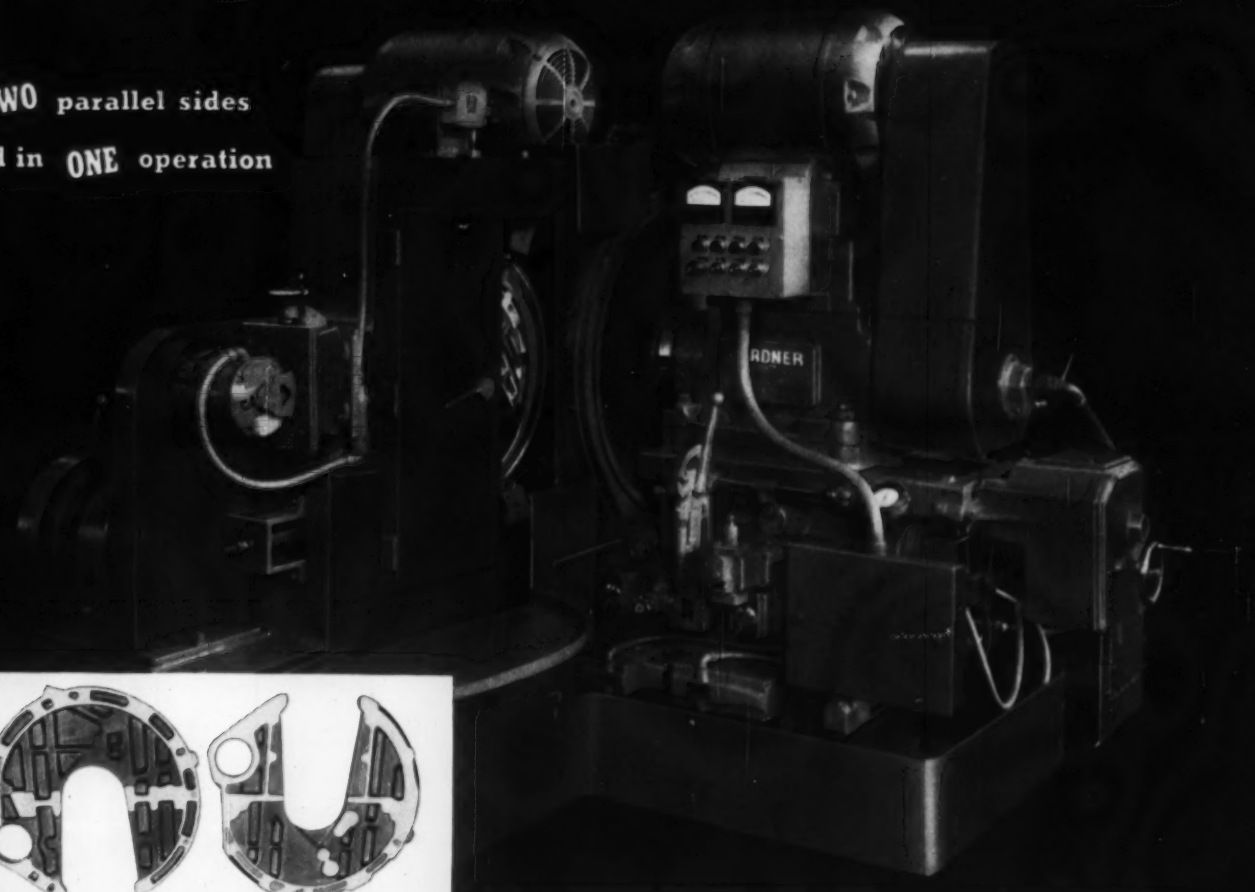
A banker of medium weight
Took a seat, but discovered too late
That while he was agile
The armchair was fragile
It collapsed like an old swinging gate.

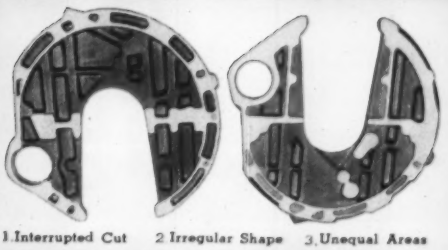
Shrdlu

(Metalworking Outlook—Page 67)

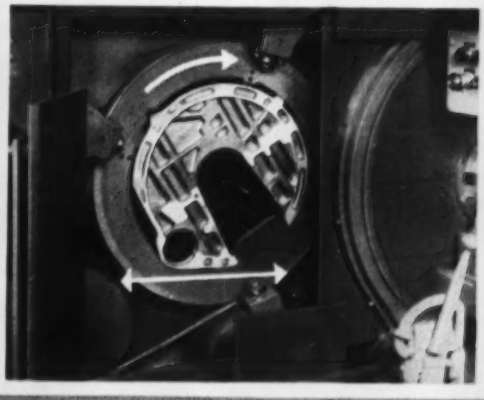
Unusual Grinding Problem Solved by "Floating" Principle of Gardner Grinding

TWO parallel sides
ground in ONE operation





1.Interrupted Cut 2.Irregular Shape 3.Unequal Areas

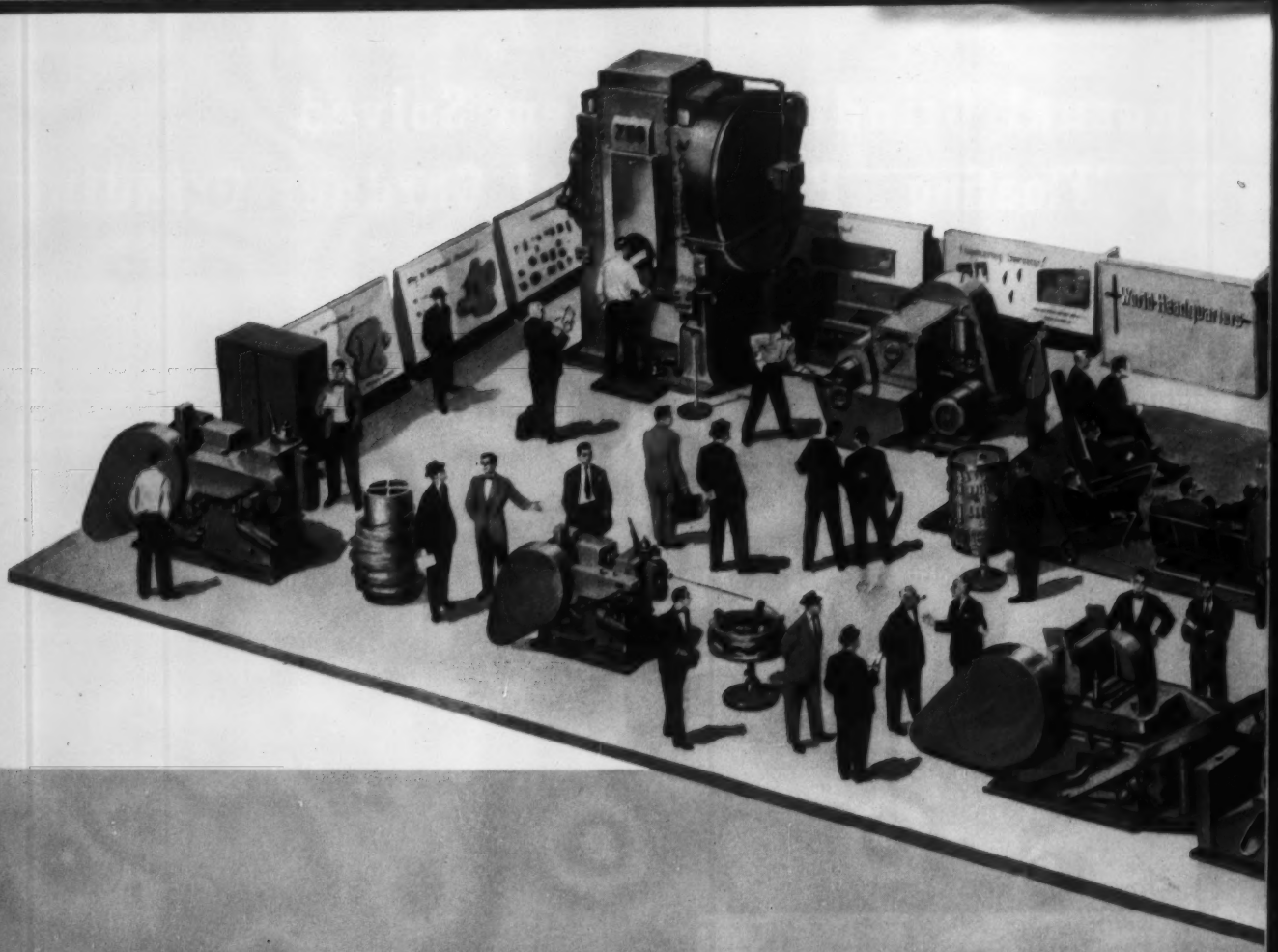


work data	
MACHINE	Gardner No. 125-30" Double Spindle Grinder.
PART	Torque converter adapter plate of aluminum alloy.
PRODUCTION	90 plates per hour.
STOCK REMOVAL	.100" overall.
TOLERANCES	.001" for parallelism and uniformity.
TOOLING	Hydraulically-oscillating work table with power driven, rotating work fixture. Work piece radially driven and free to float sidewise between the discs.
ABRASIVES	2 Gardner Yellow Rim Wire Lokt Abrasive Discs.

132M

GARDNER
precision disc grinders

BELOIT, WISCONSIN



Working with You in Forging Is Our Year-Around Job!

We sincerely thank the metalworking industry for its interest in our exhibit at the Machine Tool Show in Chicago (illustration above).

More helpful to industry, however, than this exhibit of forging equipment, is National's own "show" which is going on constantly at the plant in Tiffin, Ohio.

Our entire organization and our years of experience are here to help you "flow metal"—hot or cold, automatically or manually, routine or unusual.

We would like to welcome you at our "World Headquarters for Forging Engineering"—where tomorrow's better ways of producing metal parts are already being tested today.

NATIONAL

MACHINERY COMPANY

TIFFIN, OHIO — SINCE 1874

DESIGNERS AND BUILDERS OF MODERN FORGING MACHINES • MAXIPRESSES • REDUCEROLLS • COLD HEADERS • BOLTMAKERS • NUT FORMERS • TAPPERS • NAILMAKERS

Hartford Detroit Chicago

GERMANIUM RECTIFIERS PERFORM WITH TOP EFFICIENCY

Udylite Tests Reveal Amazing Current Conversion Efficiency

This air cooled germanium cell with a rectifying surface the size of a dime will handle a 250 ampere load in a three phase circuit continuously and three years of tests show no detectable power losses. Including heat-radiating fins, it takes up just 8 cubic inches of space and weighs only 12 ounces.

Udylite in cooperation with the General Electric Company, now proudly introduces its new group of germanium rectifiers. Years of research and testing have proven that no other metal known offers the high efficiency of germanium as a rectifier material.

In operations calling for medium to high voltages, such as barrel plating, anodizing or chrome plating the efficiency of germanium soon pays the cost since the efficiency of a 3-phase germanium cell is *98* to *99 percent.*

Even at high loading germanium has less than one-volt drop in the forward direction. As for reverse current, germanium is again particularly good, having a reverse-to-forward resistance ratio of 400,000 to 1. Furthermore, Udylite germanium rectifiers require little maintenance and can be located in areas of minimum ventilation.

For further information regarding germanium rectifiers—prices, deliveries and specifications—consult your Udylite representative or write today direct to:

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

LETTERS
TO THE EDITORS

Article Is Put To Work

Your story, "Business Trends: Put Them To Work" (July 18, page 93), is one of the most comprehensive articles I have read on the subject.

I am giving a paper before the Chemical Specialties Manufacturers Association in December on "How You Can Forecast for Your Own Business," and I would appreciate permission to quote from your article.

May I also have permission to use four of the charts in a projection machine, as a part of the discussion?

Melvin Fuld
President
Chemical Specialties Manufacturers Association
New York

• *Permission granted.*

Forecast Helpful To Research

In the Metalworking Outlook column of Sept. 19 (page 54), we noted an item, "Of Things To Come." It summarizes a survey regarding predictions.

This information is interesting to us and helpful in performing our commercial research functions. We would appreciate the address of Hugh W. Long & Co. which conducted the survey.

E. F. Burnett
Assistant to Manager
Commercial Research Section
Oil Well Supply
Division of U. S. Steel Corp.
Dallas

• *It's 511 Westminister Ave., Elizabeth, N. J.*

Instrument Measures Impact

Two new instruments were discussed in the Technical Outlook column of Aug. 8 (page 69).

The first, developed at New York University, measures impact in terms of dynamic stress-strain relationship. The second was the improved torsion test machine designed by Pitman-Dunn Laboratories for the Army Ordnance Corps.

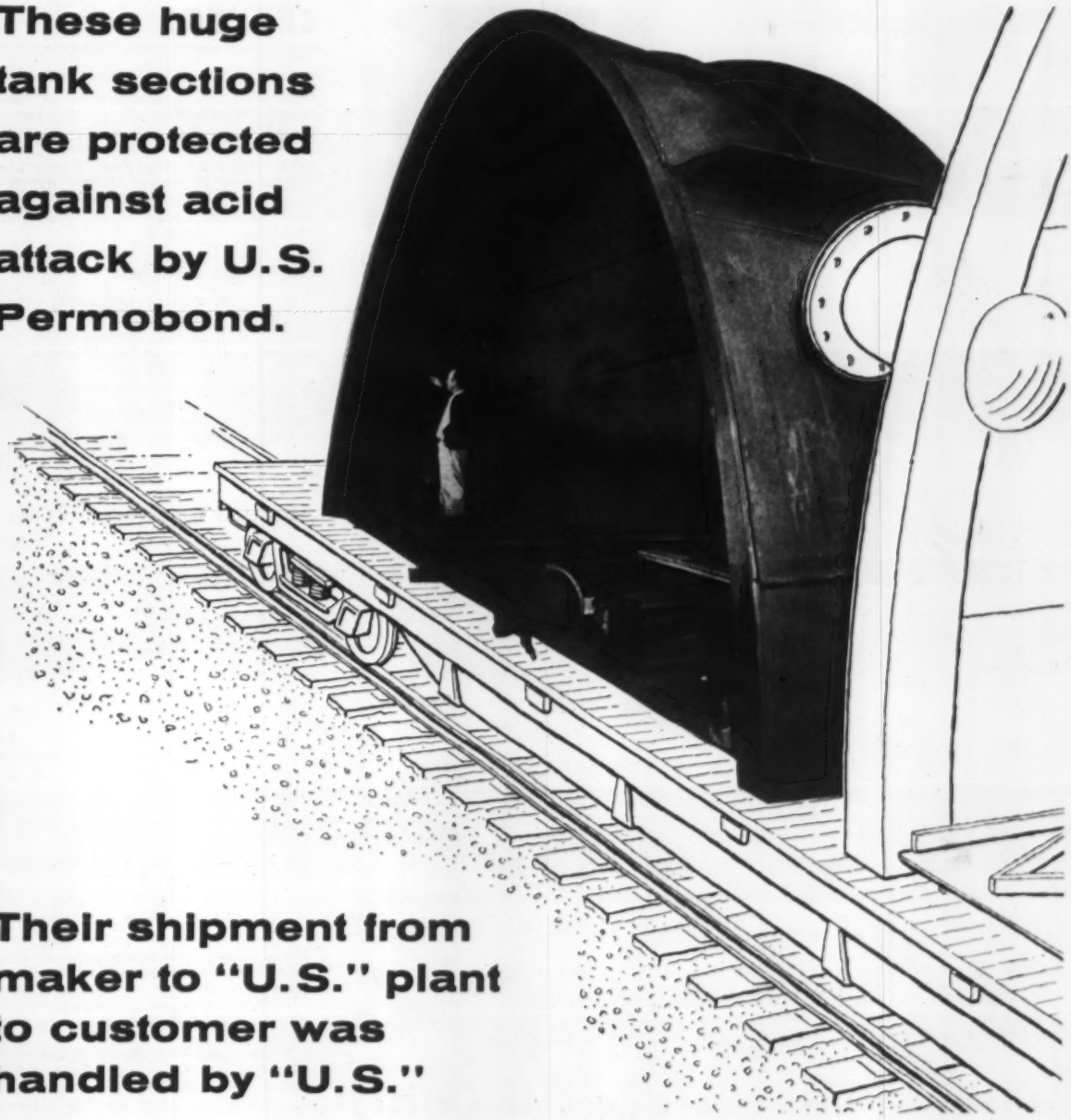
Any additional data you can furnish will be appreciated.

Michael J. McGinty
Metallurgical Research Division
Cleveland Twist Drill Co.
Cleveland

• *The first instrument is discussed in the 22-page report, "Improved Method for Testing in Torsion Impact," (PB111613), which can be obtained*

(Please turn to page 12)

These huge tank sections are protected against acid attack by U.S. Permobond.



Their shipment from maker to "U.S." plant to customer was handled by "U.S."

The expansion plans of a Southern chemical plant called for the design of a processing tank that was so huge it could not be shipped in one piece.

So the steel fabricator's engineers, working with "U.S." engineers, designed the tank in 2 parts. The tricky task of transporting these immense sections from the fabricator to the "U.S." plant (where U.S. Permobond protective linings were installed) and from there to the chemical plant was *arranged* by "U.S." traffic specialists. When the 2 sections arrived at the chemical plant, "U.S." field service men vulcanized the joints after the halves were welded together, making a complete rubber lining with no seams or joints. Thanks to the Permobond® lining, the tank is immune to acid attack.

For protection against corrosion of tanks, piping, valves—get in touch with U.S. Rubber technicians at the address below.

"U.S." Research perfects it . . ."U.S." Production builds it . . . U.S. Industry depends on it.

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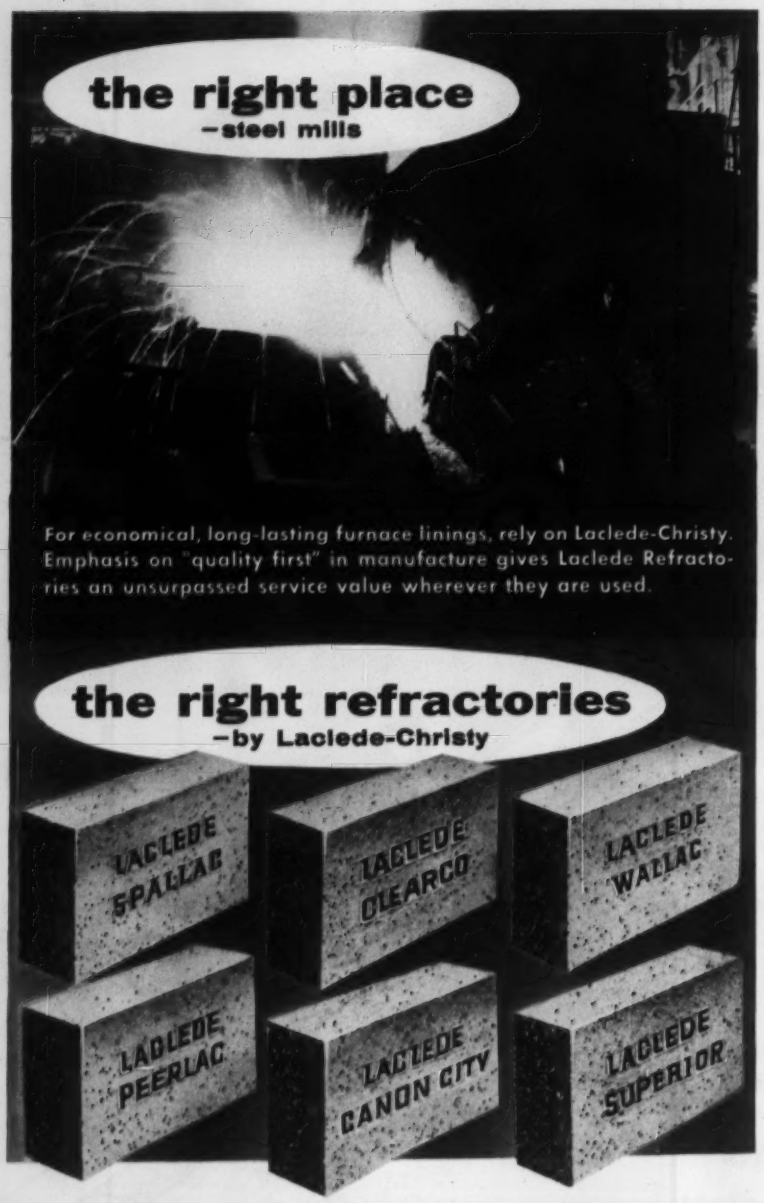
the right place
—steel mills
For economical, long-lasting furnace linings, rely on Laclede-Christy. Emphasis on "quality first" in manufacture gives Laclede Refractories an unsurpassed service value wherever they are used.
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LACLEDE CLEARCO
LACLEDE WALLAC
LACLEDE PEERLAC
LACLEDE CANON CITY
LACLEDE SUPERIOR

the right time to use Laclede-Christy refractories is now

Your use of Laclede-Christy refractories is your assurance of steady, economical production. You get "quality-first" product performance, verified by many, many service records. You get refractories to meet your exact requirements. You get quick, efficient service from nearby Laclede-Christy plants or distributors' warehouses. Call now.

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LETTERS

(Concluded from page 10)

from OTS, U. S. Department of Commerce, Washington 25, D. C. for 75 cents.

The second is discussed in the June, 1955 issue of New York University's Engineering Research Review *which is obtainable from the Office of Information Services, New York University, University Heights 53, N. Y.*

Guilty, as Charged

In the Mirrors of Motordom column of Sept. 5 (page 55), it was incorrectly stated that Buick possesses the only torque tube drive in the industry.

Since 1941, Nash has used a torque tube drive continuously in some model. Currently, all Nash and Hudson senior models use this drive along with coil springs at the rear, a la Buick.

Frank H. Burgess
97 Highland Ave.
Watertown, Conn.

Aluminum Cuts French Fries

We noticed a reference to aluminum diecasting in the article, "Diecastings Lighten Sewer's Load" (Sept. 19, page 122).

Can you recommend anyone who manufactures household articles and novelties made from diecast aluminum? We are particularly interested in obtaining catalogs on kitchen gadgets.

H. W. Halton
Resident Engineer
C. Tennant, Sons & Co. of New York
New York

• *We suggest you contact the American Die Casting Institute, 366 Madison Ave., New York 17, N. Y.*

Story Ideal for Reference

Please send two copies of the article, "Heat Treating Copper-Base Alloys" (Sept. 19, page 114). This article is informative and ideal for file reference.

M. E. Wood
Mfg. Research Dept.
Ford Motor Co.
Dearborn, Mich.

Elevator Suppliers Wanted

In reading the article, "Elevator Sales Going Up" (Sept. 12, page 63), we came across your statement: "Sixty companies in the U.S. manufacture some major components of the freight and passenger elevators."

We would like to know who these people are. May we have a list?

L. F. Hirsh
President
Lustrik Inc.
Philadelphia

• *This statement was based on estimates made by several members of the industry. We suggest you write John McArdle, commissioner, National Elevator Manufacturers Industry Inc., 101 Park Ave., New York 17, N. Y.*

There's built-in durability in

WEIRKOTE

for all sheet-metal work

Wherever a durable zinc-coated material is needed for sheet metal fabrication, there's nothing better than Weirkote. Gutters, downspouts, ducts—no matter what the application, the name Weirkote on galvanized steel means uniformly high quality steel, tightly coated with zinc to resist cracking, peeling, flaking and corrosion. The high quality is assured by Weirton's modern mills and methods —and men.

When your specifications call for galvanized steel, call Weirton, and be sure.

Weirkote is available in coils and cut lengths: gauges 16 to 30 inclusive. Maximum width—42", maximum cut length—168". Weirkote can be obtained to fit any customer requirement. For standard roofing and siding it is guaranteed to conform to A.S.T.M. specification A361-52T.

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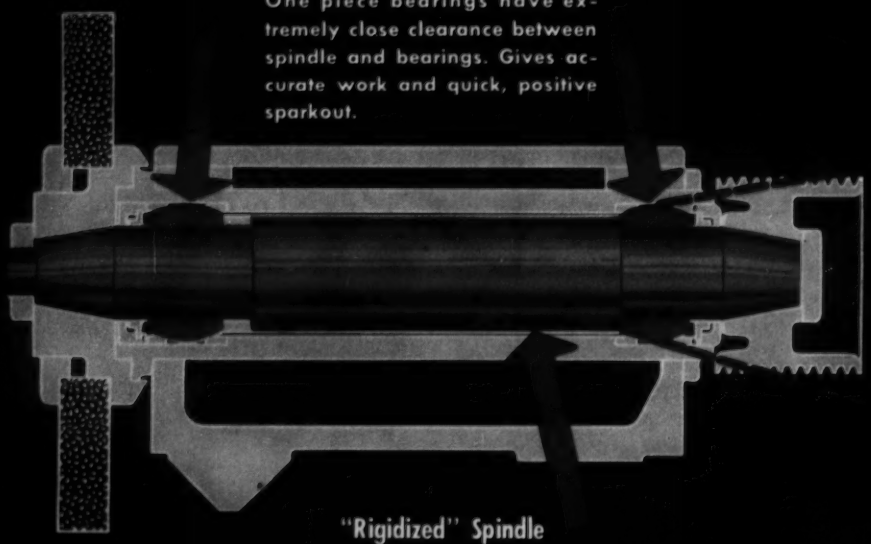
Only Landis grinders have "rigidized" bearings and spindles

"Rigidized" Microsphere Bearings

One piece bearings have extremely close clearance between spindle and bearings. Gives accurate work and quick, positive sparkout.



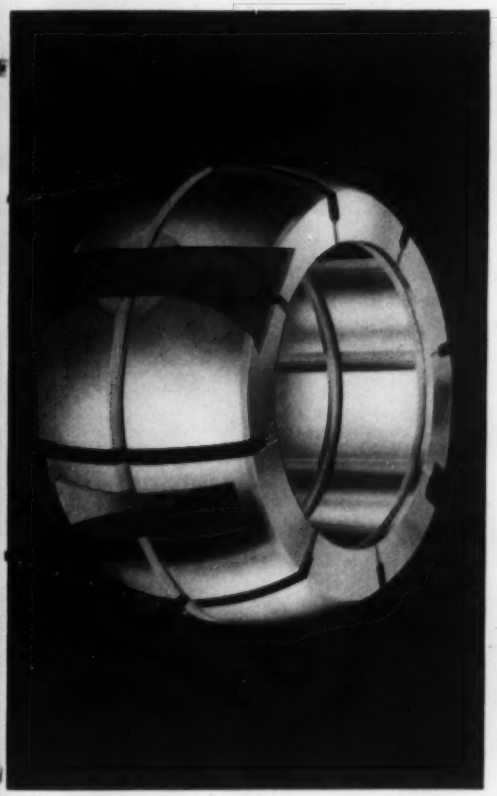
"Rigidized" Spindle

Because the diameter of the spindle between bearings is increased, you can take heavy cuts without loss of accuracy or finish.

LANDIS

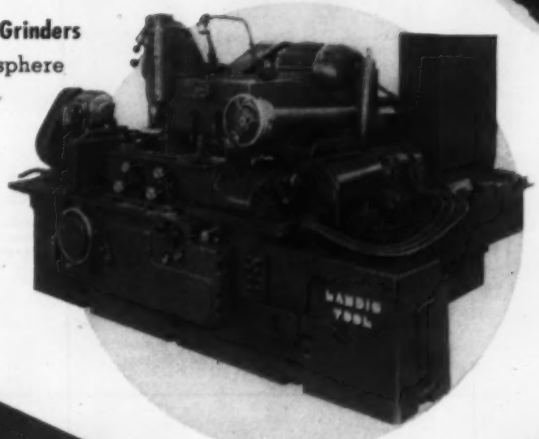
LANDIS TOOL COMPANY / WAYNESBORO, PENNA., U. S. A.

Landis Universal Grinders have rigidized Microsphere bearings and spindle.

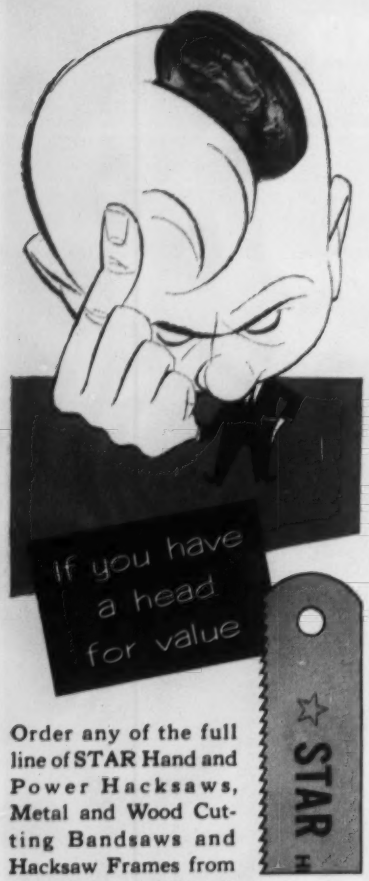


Landis Plain Grinders have rigidized Microsphere bearings and spindle.

Landis Centerless Grinders have rigidized Microsphere bearings and spindle in both the grinding wheel and regulating wheel heads.



Landis Single-Purpose Grinders have rigidized Microsphere bearings and spindle.



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Industry prefers STAR quality, prefers the blades made of carefully heat-treated, top-quality steel, fabricated on specially designed equipment – because STAR consistently delivers fast, economical metal cutting and long blade life.

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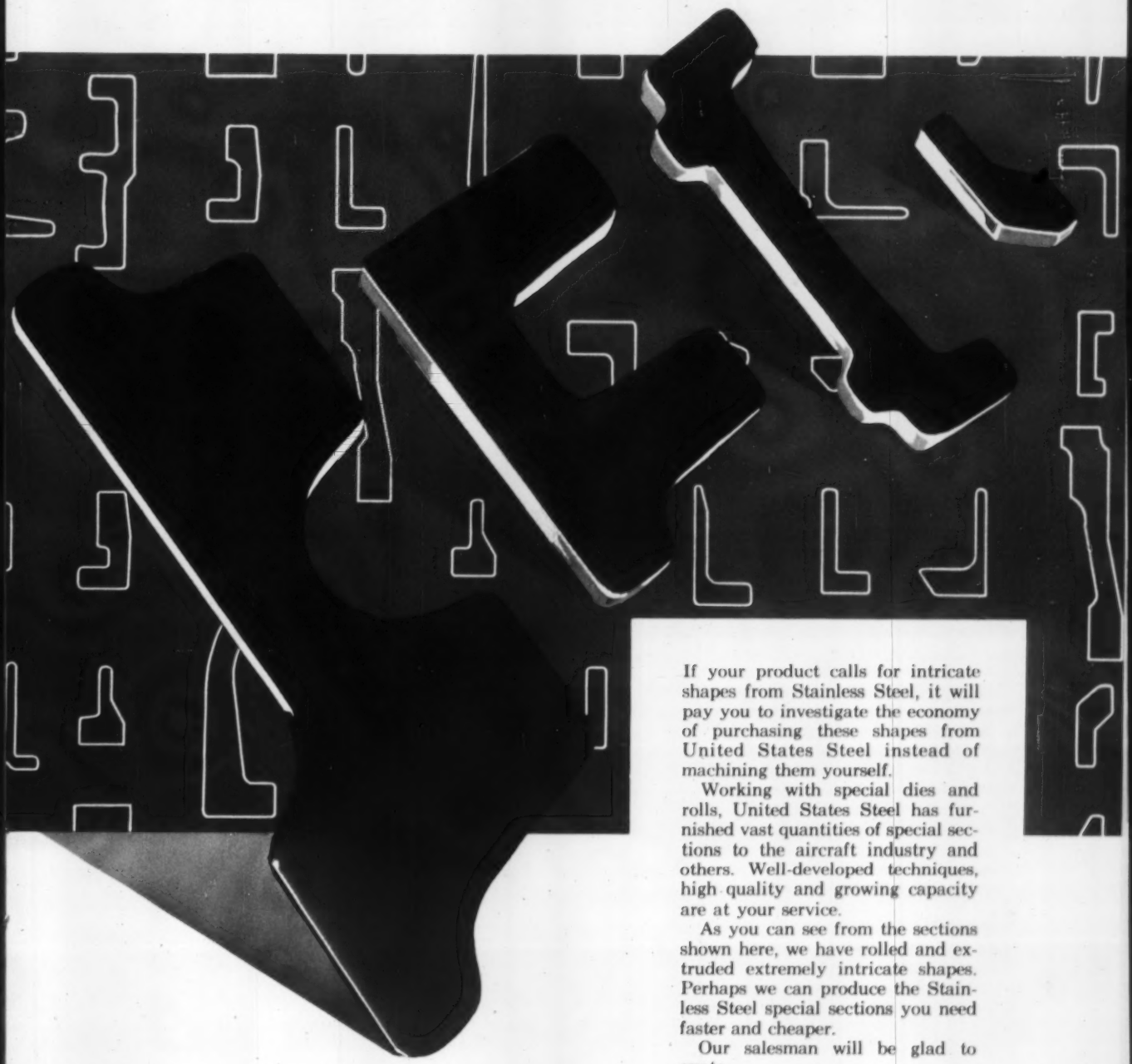

If your product calls for intricate shapes from Stainless Steel, it will pay you to investigate the economy of purchasing these shapes from United States Steel instead of machining them yourself.

Working with special dies and rolls, United States Steel has furnished vast quantities of special sections to the aircraft industry and others. Well-developed techniques, high quality and growing capacity are at your service.

As you can see from the sections shown here, we have rolled and extruded extremely intricate shapes. Perhaps we can produce the Stainless Steel special sections you need faster and cheaper.

Our salesman will be glad to quote.

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UNITED STATES STEEL

"Forgings stay straight as an arrow in these furnaces"

says
Clair J. Koehler,
U. S. Steel Heater

OUR HOMESTEAD FORGINGS DIVISION has the most modern heat treating facilities available to accommodate the most critical forging specifications.

These vertical furnaces, for example.

These furnaces permit the ultimate in temperature control and completely eliminate any possibility of distortion even when heating forgings, such as the turbine rotor shown, to temperatures as high as 1830°F!

Why did we install these furnaces?

Clair Koehler, a heater for 15 of his 31 years with us, can answer. "Large shafts stay straight as an arrow in these verticals. We get better temperature control, too. Total temperature variation is less than 10°F. from top to bottom."

Such laboratory-type precautions are typical of the care all forgings receive at United States Steel.

Address inquiries or requests for our free 32-page booklet on USS Quality Forgings to United States Steel, Room 4968, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

USS

Quality FORGINGS

- heavy machinery parts—carbon, alloy, stainless
- forged steel rolls and back-up roll sleeves
- electrical and water wheel shafts
- hammer bases and columns

HIGH TEMPERATURES and severe thermal shock call for furnace arches that can take it. Plant engineers find that refractory concrete furnace arches made with Lumnite calcium-aluminate cement, give long, trouble-free service, yet cost less than other types.

"Now we get three forge-furnace arches for the price of one!"

NEW ARCH BEING PLACED at large midwestern forge plant. This company is enthusiastic about the outstanding service given by refractory concrete arches made with Lumnite.

FABRICATED METAL MOLDS in three sizes are used by this forge plant to cast arches for 25 of their furnaces. Refractory concrete arch sections are easily precast and stored for future use . . . eliminate costly fitting problems.

"We reduced the cost of furnace arches 65% by casting them of refractory concrete made with Lumnite* cement," reports the plant engineer of a leading forge plant in the Chicago area.** "Refractory concrete arches have given us excellent service—even in periods of extremely heavy production when temperatures soared."

Easily cast in wooden or steel molds, pre-cast monolithic arch sections save installation time by eliminating costly fitting. They give long, trouble-free service, too, because there are no small units to work loose.

You'll find many other time- and cost-saving uses for refractory concrete made with Lumnite calcium-aluminate cement and suitable aggregates in your plant. Keep a supply of Lumnite cement or prepared Lumnite-base castables on hand for emergencies. Castables are packaged mixes of Lumnite cement plus aggregates selected for specific temperature and insulation needs—made and distributed by leading manufacturers of refractories. Write today for information about industrial concretes made with Lumnite cement.

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***Name on request.*

S-L-110

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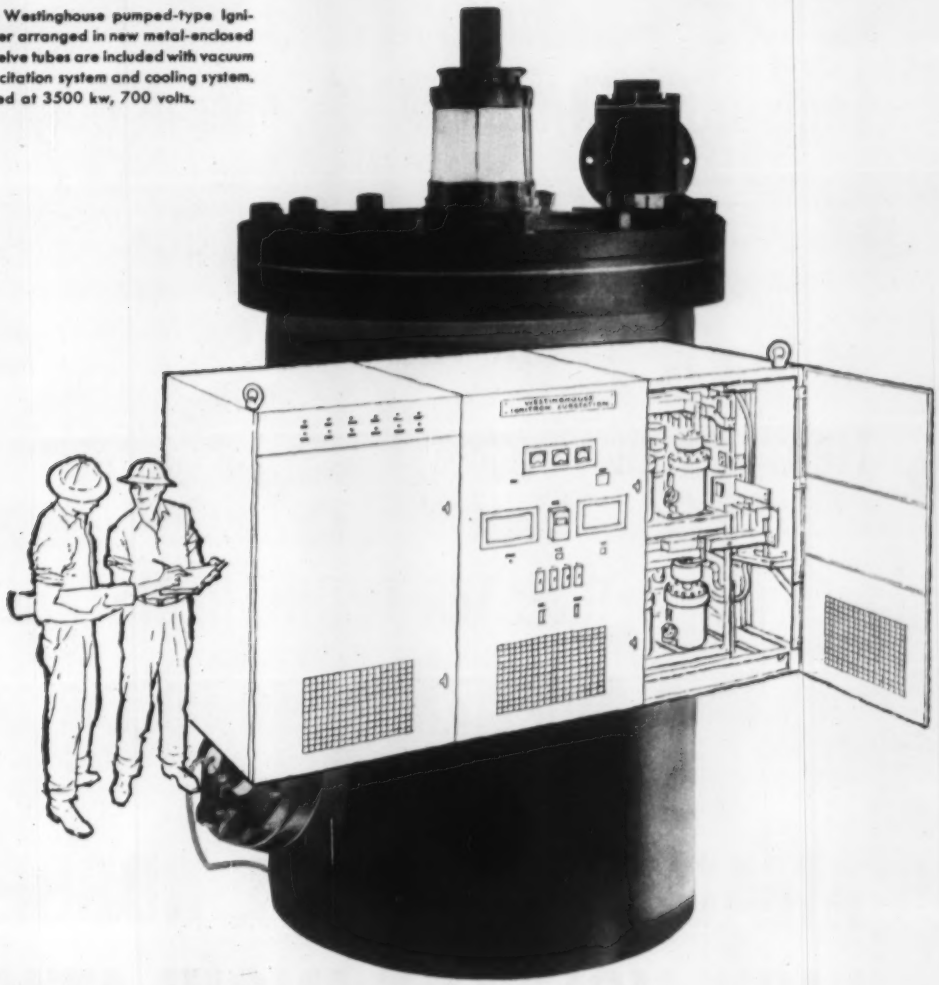
FOR INDUSTRIAL CONCRETES

REFRACTORY • INSULATING • OVERNIGHT • CORROSION-RESISTANT

UNITED STATES STEEL HOUR—Televised alternate Wednesdays

This is the Westinghouse pumped-type Ignitron rectifier arranged in new metal-enclosed design. Twelve tubes are included with vacuum system, excitation system and cooling system. Unit is rated at 3500 kw, 700 volts.



Pumped Ignitron rectifiers now "packaged" for more safety, compactness . . . easier installation

The rectifier with millions of installed kw behind it gives you d-c power with these 5 big advantages.

Complete metal enclosure—This new d-c conversion "package" is completely wired and completely self-contained—giving extra savings in installation cost and time. Easily close coupled to transformer and switchgear.

Always safe—"Dead" front of the metal enclosure is a big extra feature, makes it practical to install in open areas.

Less floor space—Everything has been compacted into a much smaller area—save on plant space and floor area.

Easy to install—Can go in on any reasonably level floor, nothing special needed because of light weight and absence of vibration.

Westinghouse pumped Ignitrons last and last! This conversion package has indefinite life, can be easily serviced in the field. The first pumped Ignitron, installed in 1937, is still performing efficiently!

Call your local Westinghouse sales engineer or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-10447

D-C CONVERSION PACKAGES—FOR ALL RANGES—WITH PUMPED OR SEALED IGNITRONS

YOU CAN BE SURE...IF IT'S Westinghouse

Facts from **ANACONDA**—Pioneer in Butyl Insulation

FROM SERVICE RECORDS

FROM TESTS—

Here's proof you get

GREATER OZONE RESISTANCE

MORE AMPS PER DOLLAR . . . with

ANACONDA BUTYL RUBBER HIGH-VOLTAGE INSULATION

Millions of feet of Anaconda Type AB butyl-insulated cable in use. A new series of tests giving comparative performance data. Tests that demonstrate qualities that make for long life, low over-all cost. All these prove the clear superiority of Type AB.

Here are actual figures you can use to judge the relative performance of high-voltage cables.

These are part of an exhaustive series of tests that clearly show Anaconda Type AB butyl insulation gives performance *far beyond* industry specification standards—in every important electrical and physical property.

Butyl rubber has *inherent* high resistance to ozone, heat and moisture. Thus compounding efforts ordinarily spent to obtain these qualities have been devoted to the development of other desirable properties.

Anaconda — in 1945 — was the *first* to make and offer a high-voltage cable with butyl insulation. Since then it has supplied millions of feet of this cable to utilities and industrials.

Read the next 3 pages for first-time facts and figures vital to your buying decision.

Samples of Type AB-insulated cable bent in circle are placed in ozone chamber for ozone-resistance test.

Anaconda Type AB resists ozone cutting best—Tested 72 hours in ozone chamber without failure

FAR LONGER THAN NEEDED TO PROVE ITS HIGH OZONE RESISTANCE!

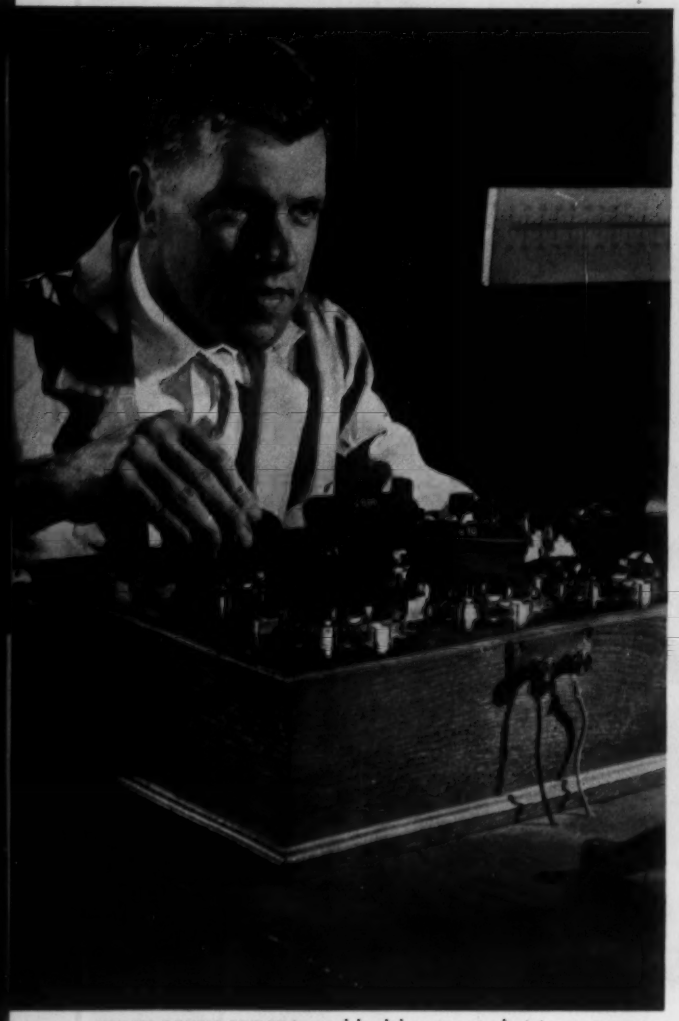
Ozone resistance is one of the more important tests on high-voltage cable. For ozone—generated by the breakdown of air under high electrical stress—is a tough enemy of cable at 2,001 volts and up. This active form of oxygen attacks ordinary rubber insulation . . . causing cuts and cracks that mean early cable failure.

Surpassing the standard industry specification test of three hours, Anaconda Type AB butyl showed no injury after *72 hours* in 0.026-0.030% ozone concentration . . . *24 times longer* than butyl specification requirements at the same concentration, and *24 times longer* than required in oil base specifications at a lower concentration. Type AB withstood 72 hours' exposure *after aging* without evidence of damage. This is positive proof of the added margin of protection obtained with Type AB.

Results of oxygen-pressure tests also show clearly the superiority of Type AB insulation in resistance to oxidation aging—tensile strength and elongation retain high values slightly below initial.

Turn the page for more data on Anaconda Type AB insulation

Facts from **ANACONDA**—Pioneer in Butyl Insulation



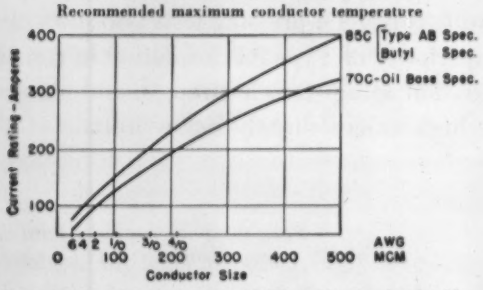
KELVIN DOUBLE BRIDGE is used by laboratory technician to measure d-c resistance of cables. This accurate method of determining conductor temperature assures reliable results.

COMBINATION MANUAL AND AUTOMATIC switchboard is used for control of the constant-temperature room for testing cables—from very cold to very hot. Such modern equipment makes Anaconda's research and testing facilities the finest in the industry.

Anaconda Type AB has 22% more current-carrying capacity. Recommended for operation at 85C!

OPERATING TEMPERATURE

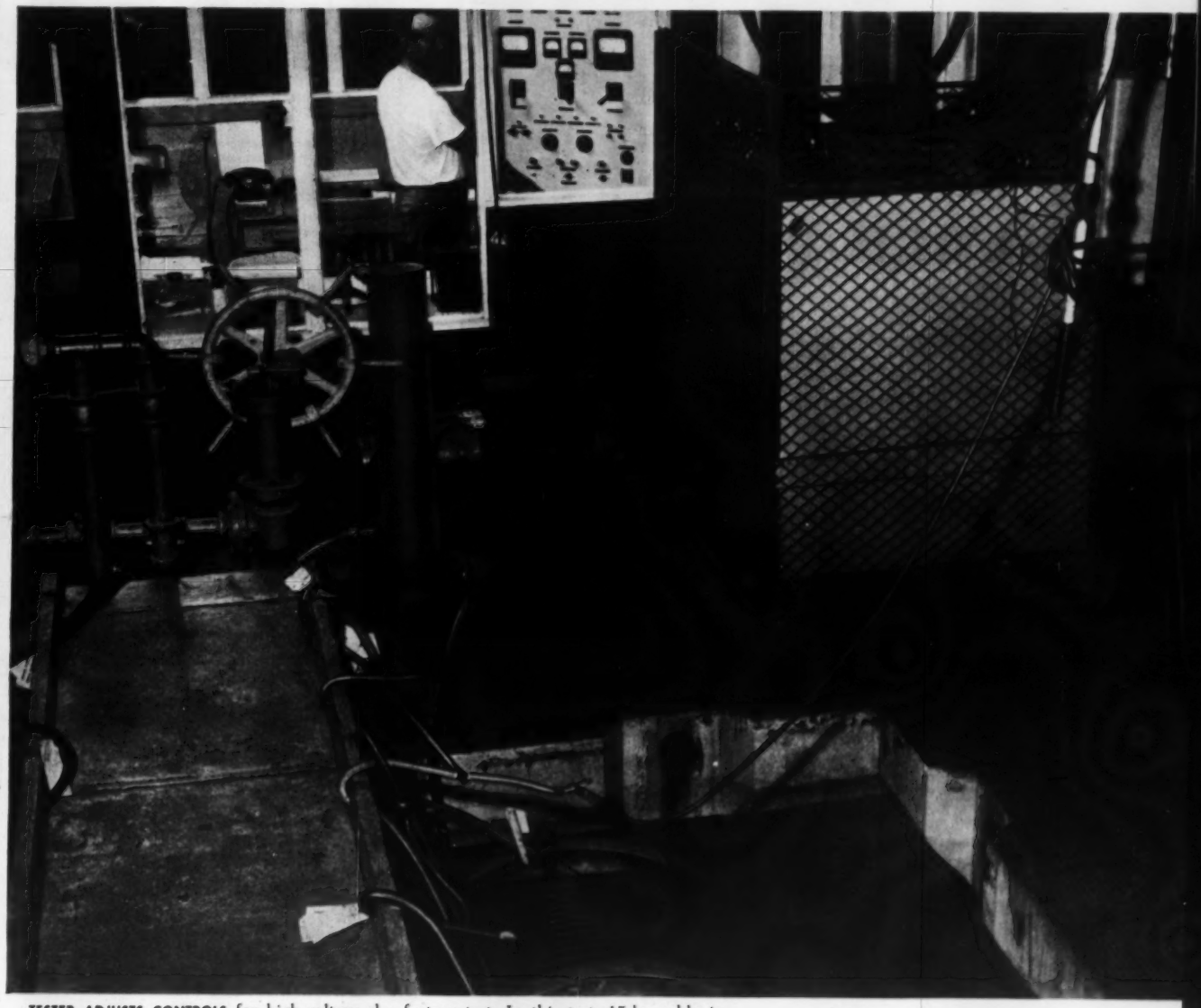
Recommended maximum conductor temperature



Current ratings based on 3-1/c, 15-KV, rubber insulated cables in one conduit, 100% load factor, 40C ambient temperature.

Severe physical and electrical tests for long life and stability back Anaconda's recommendation of Type AB butyl insulation for *operation at 85C maximum operating temperature.* Industry specifications recommend 70C for oil base. Thus, the curves on the chart show Type AB's current-carrying capacity advantage is 22% over oil base. With Type AB-insulated power cables, users can now carry more current per circuit!

To give added assurance of peak performance — Anaconda sets voltage tests high



TESTER ADJUSTS CONTROLS for high-voltage d-c factory test. In this test, 15-kv cable is subjected to 106 kv for a full 15 minutes. This voltage is 33% above industry requirements.

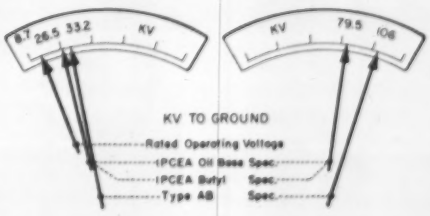
The high-voltage factory test is made with both a-c and d-c on every reel of cable. To make sure it has highest quality, Type AB is tested at 25% above industry requirements with a-c, and 33% above industry requirements with d-c.

FOR COMPLETE INFORMATION on the full series of tests, see your nearest Anaconda Wire & Cable Company representative; or write 25 Broadway, New York 4, N. Y.

HIGH-VOLTAGE FACTORY TEST

SPEC: After 6 hours' immersion

A-C—5 Min **D-C—15 Min**

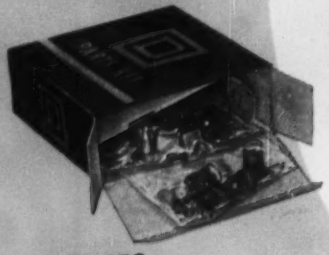


Ask the Man from ANACONDA® **PIONEER IN BUTYL INSULATION**

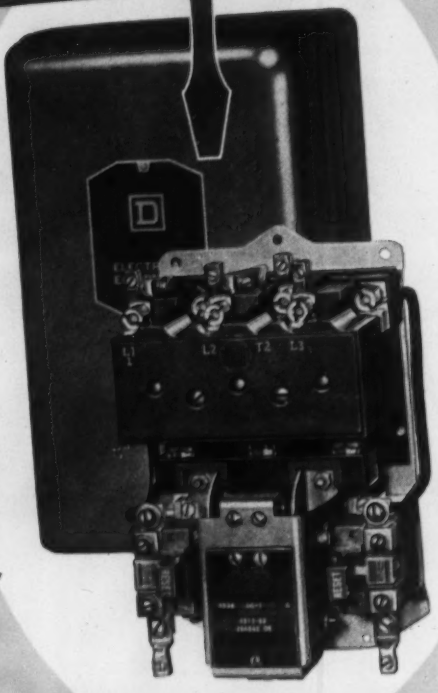
Qwik Change

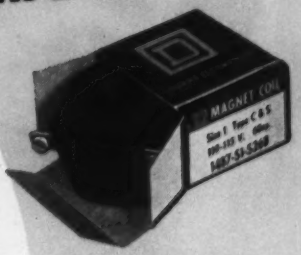
with PACKAGED MOTOR STARTER PARTS!

INTERLOCKS
A wide variety of quick-change, front-mounted interlocks adds flexibility for special applications

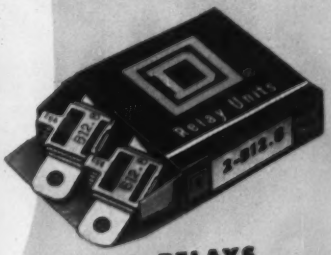


CONTACTS
Packaged replacement contacts are easily installed without disturbing wiring



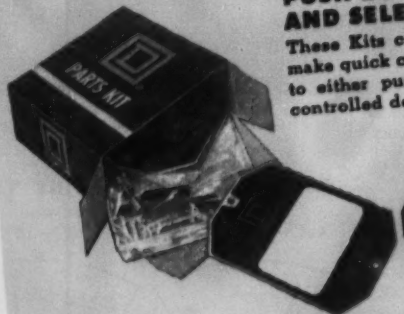


COILS
Screwdriver is only tool required for quick change of magnet coil to accommodate different voltages



O.L. RELAYS
A wide variety of easily selected, packaged overload relay heater units provides quick changes to meet varying requirements for overload protection

PUSH BUTTONS AND SELECTOR SWITCH
These Kits contain all parts necessary to make quick changes from standard starters to either push button or selector switch controlled devices



EASY to Identify!
EASY to Buy!
FASTER to Install!

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

CALENDAR
OF MEETINGS

Oct. 17-18, American Coke & Coal Chemicals Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: 711 14th St. N.W., Washington 5, D. C. President: Samuel Weiss.

Oct. 17-18, Boston Conference on Distribution: Hotel Statler, Boston. Information: Daniel Bloomfield, director, 80 Federal St., Boston 10, Mass.

Oct. 17-19, American Management Association: Office management conference, Hotel Statler, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president: James O. Rice.

Oct. 17-21, National Metal Congress & Exposition: Commercial Museum and Convention Hall, Philadelphia. Information: American Society for Metals, 7301 Euclid Ave., Cleveland 3, O. Secretary: W. H. Eisenman.

Oct. 17-21, American Society for Metals: Annual meeting and exhibit, Benjamin Franklin hotel, Philadelphia. Society's address: 7301 Euclid Ave., Cleveland 3, O. Secretary: W. H. Eisenman.

Oct. 17-21, American Welding Society: National fall meeting, Bellevue Stratford hotel, Philadelphia. Society's address: 33 W. 39th St., New York 18, N. Y. Secretary: J. G. Magrath.

Oct. 17-21, Society for Nondestructive Testing: Fall technical meeting, Sylvania hotel, Philadelphia. Society's address: 1109 Hinman Ave., Evanston, Ill. Secretary: Philip D. Johnson.

Oct. 17-21, National Safety Congress & Exposition: Conrad Hilton, Congress, Morrison and LaSalle hotels, Chicago. Information: R. L. Forney, general secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 18-19, American Management Association: Special packaging conference, Hotel Commodore, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president: James O. Rice.

Oct. 19-20, American Society of Mechanical Engineers: Fuels-coal conference, Neil house, Columbus, O. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

Oct. 19-20, Steel Shipping Container Institute Inc.: Fall meeting, Pierre and Hampshire house hotels, New York. Institute's address: 600 Fifth Ave., New York 20, N. Y. Secretary: L. B. Miller.

Oct. 19-21, Gray Iron Founders' Society Inc.: Annual meeting, Schroeder hotel, Milwaukee. Society's address: 930 National City—E. 6th St. Bldg., Cleveland 14, O. Executive secretary: Donald H. Workman.

Oct. 20-Nov. 3, International Atomic Energy Exhibit: Carnegie Endowment International Center, United Nations Plaza, 46th St. and First Ave., New York, N. Y. Information: Atomic Industrial Forum Inc., 260 Madison Ave., New York 16, N. Y.

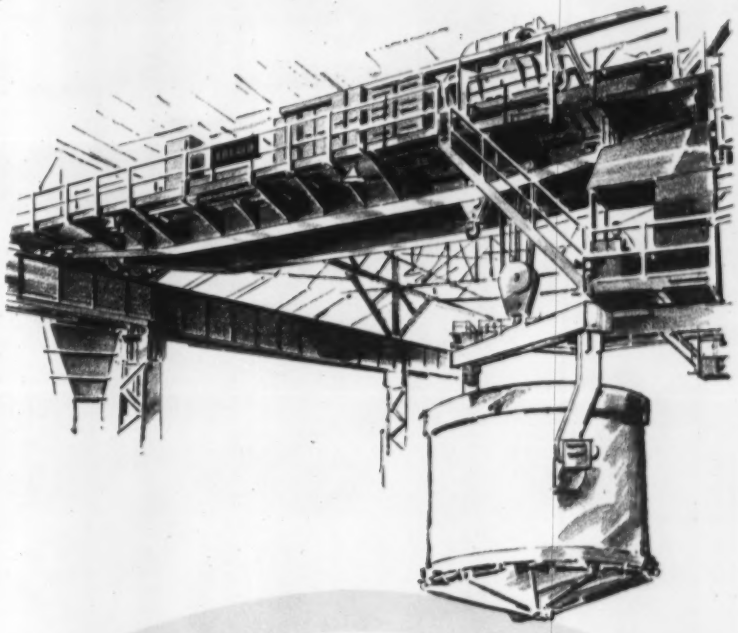
Oct. 23-26, American Gear Manufacturers Association: Semiannual meeting, Edgewater Beach hotel, Chicago. Association's address: One Thomas Circle, Washington 5, D. C. Secretary: John C. Sears.

Oct. 23-26, American Hardware Manufacturers Association: National meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association's address: 342 Madison Ave., New York 17, N. Y. Secretary: Arthur L. Faubel.

Oct. 23-26, National Association of Sheet Metal Distributors: Annual meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

Oct. 23-26, Scientific Apparatus Makers Association: Fall meeting, the Cavalier, Virginia Beach, Va. Association's address: 20 N. Wacker Dr., Chicago, Ill. Executive vice president: Kenneth Andersen.

Oct. 24-25, Rail Steel Bar Association: Fall meeting, Sherman hotel, Chicago. Association's address: 38 S. Dearborn St., Chicago 3, Ill. Secretary: W. H. Jacobs.



Steel mill service is TOUGH service!

When an EDERER crane is "job-engineered" for steel mill service—it is designed and built to do its job day-in-day-out, 365 days a year—with no down time for maintenance. Every detail of oversize construction throughout meets—or exceeds—AISE specifications. Operating speeds are carefully calculated for the exact requirements of the job to be done. Result? A crane that really gives heavy-duty performance.

EDERER can "job-engineer" a crane to perform with equal ability in YOUR plant—YOUR industry. Our industrial crane catalog will give you details.

EDERER Industrial crane catalog—Bulletin CR-610—gladly sent to you on request.

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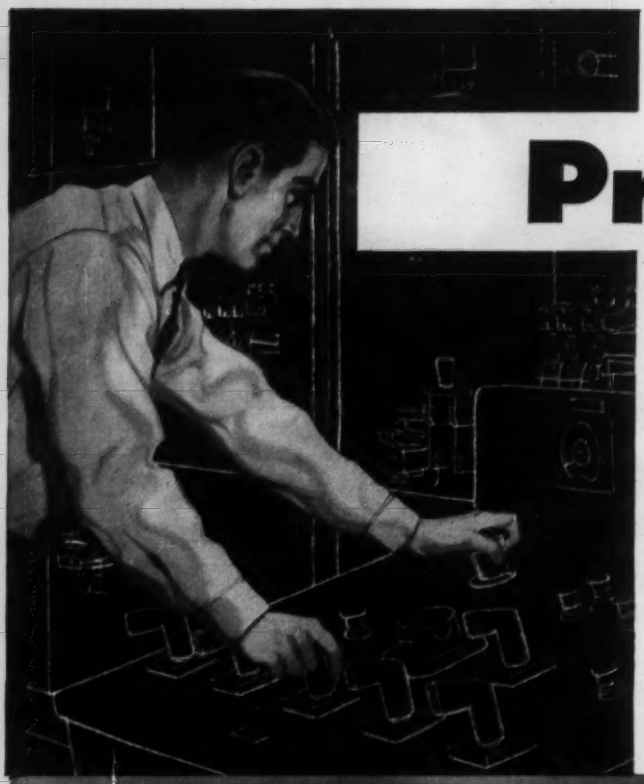
EDERER CRANES

OVER 53 YEARS "JOB-ENGINEERING" CRANES FOR INDUSTRY



ALLIS-Processing

Allis-Chalmers constant potential and variable voltage systems are providing dependable precision control in many of the nation's largest mills.

When you modernize

to meet the double challenge of a growing market and heavy competition, take advantage of Allis-Chalmers experience. See your nearby representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

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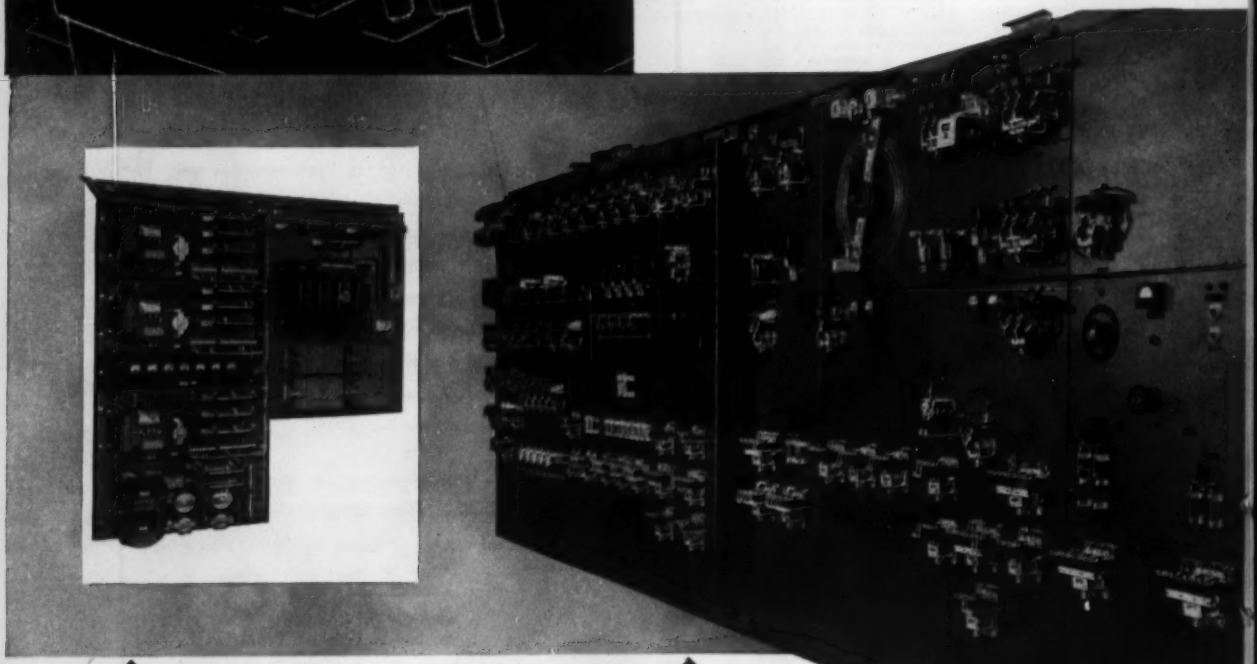


Magnetic amplifier speed regulatory panels.

Variable voltage control board for 39-inch continuous annealing line.

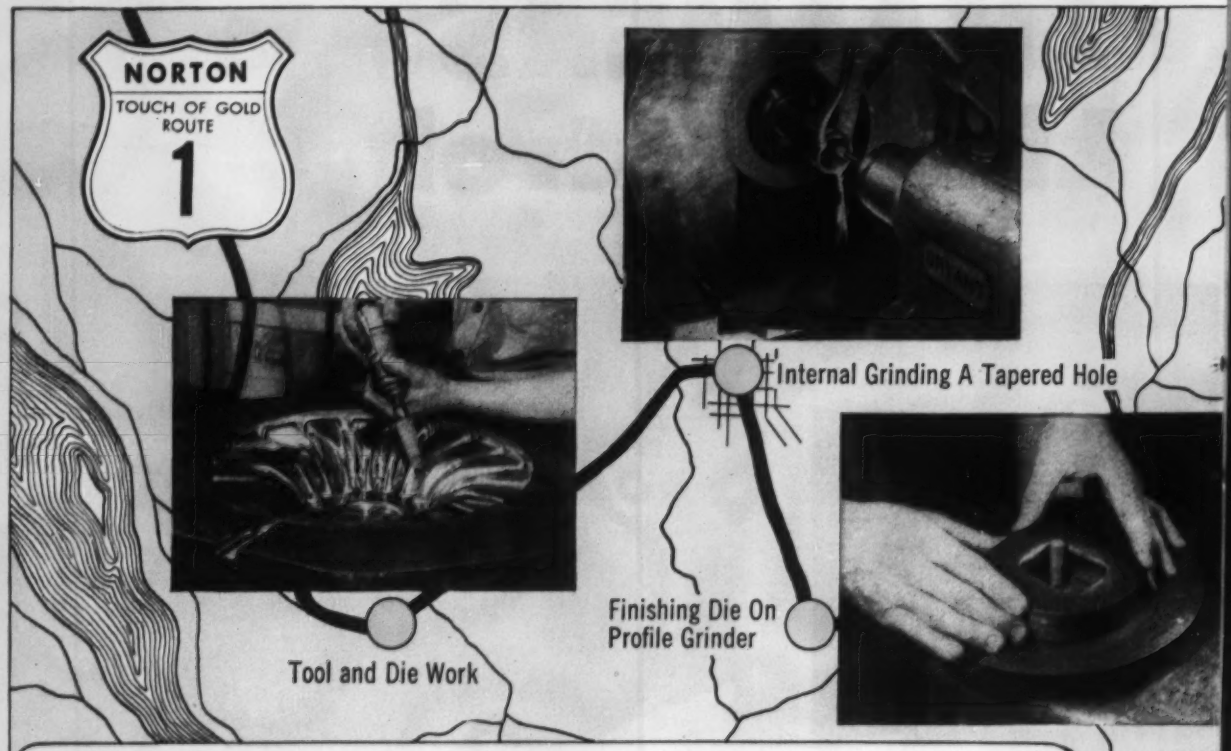
A-C ALLIS-CHALMERS

ALLIS-

CHALMERS
Line Control

Entry section control board for pickle line.
Delivery section control board.
Delivery end operator's desk, stainless steel top.
Riveter's cabinet, stainless steel front.

CHALMERS



YOUR "TOUCH of GOLD" ROAD MAP TO HARD-TO-REACH GRINDING SPOTS

NORTON MOUNTED WHEELS AND POINTS

bring you big savings on hundreds of small grinding jobs

Norton mounted wheels and points bring the same "Touch of Gold" grinding performance to small or hard-to-get-at areas that the big Norton wheels deliver in the "wide open spaces." Which means that every time you put one to work you get better grinding for less money. Here are some reasons why:

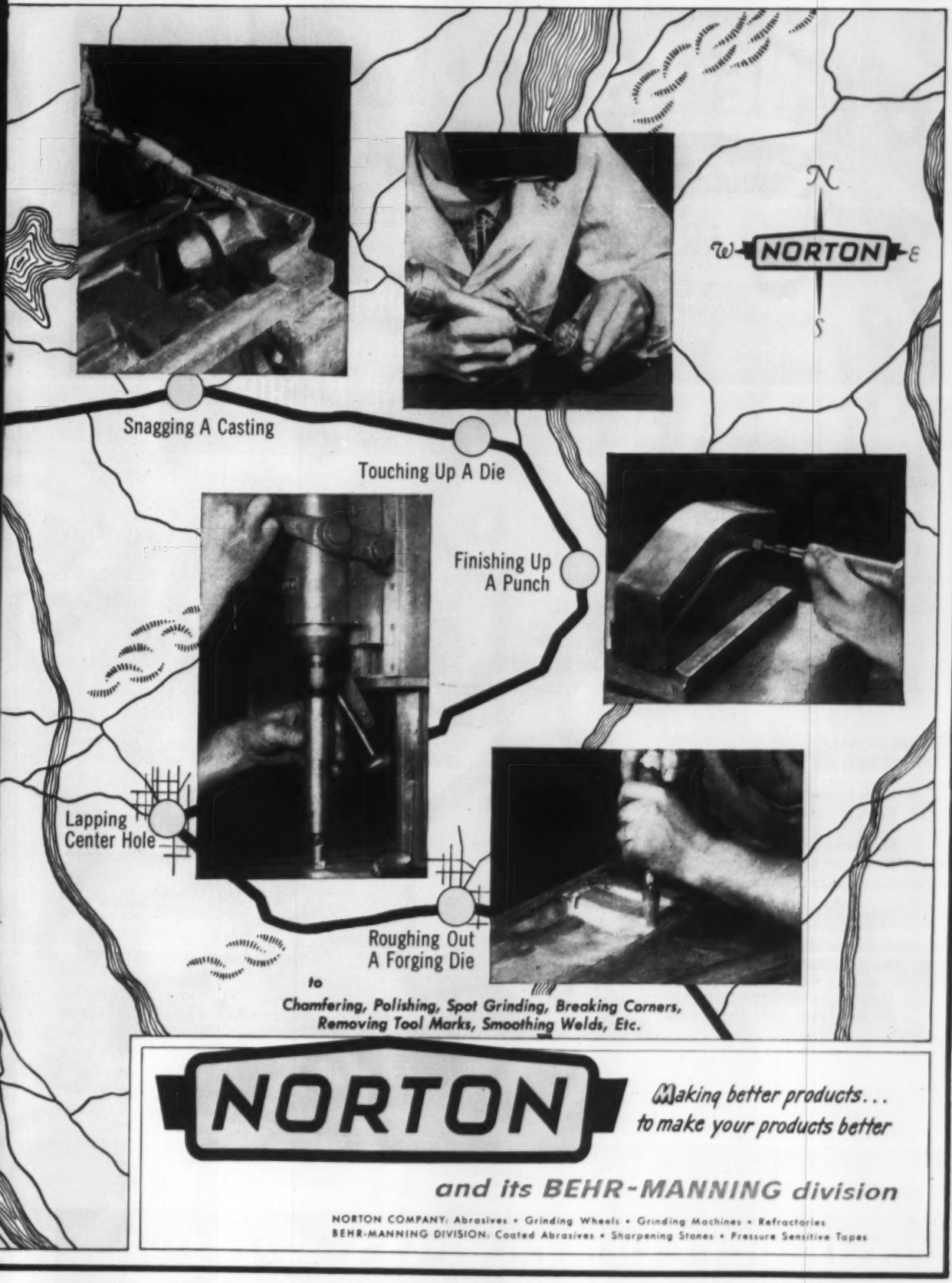
- ***Norton mounted wheels and points stay on their spindles — stay on TIGHT, under severest use. Norton-developed mounting techniques make sure of this.***
- ***They're trued on their own spindles, which assures: (1) perfect concentricity; (2) sharpness and fast-cutting action; (3) accuracy of dimensions and shape. They're ready to go to work immediately.***
- ***They're duplicated identically from lot to lot, thanks to Norton's statistical quality control in processing.***
- ***They're a 100% complete line, for grinding all metals and many other materials . . . made in nearly 200 standard shapes and sizes . . . in the famous ALUNDUM* and CRYSTOLON* abrasives, vitrified or resinoid bonded . . . in diamond abrasives, metal or resinoid bonded . . . and in the laminated, semi-flexible BF construction, resinoid bonded. For ultra-high speed precision grinding, special spindles and cement are available.***

Your Norton Distributor

can help you plan your profit-boosting "Touch of Gold" Route to hard-to-reach grinding spots. See him for the mounted wheels and points you need. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone directory, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

W-1648



NORTON

Making better products... to make your products better

and its BEHR-MANNING division

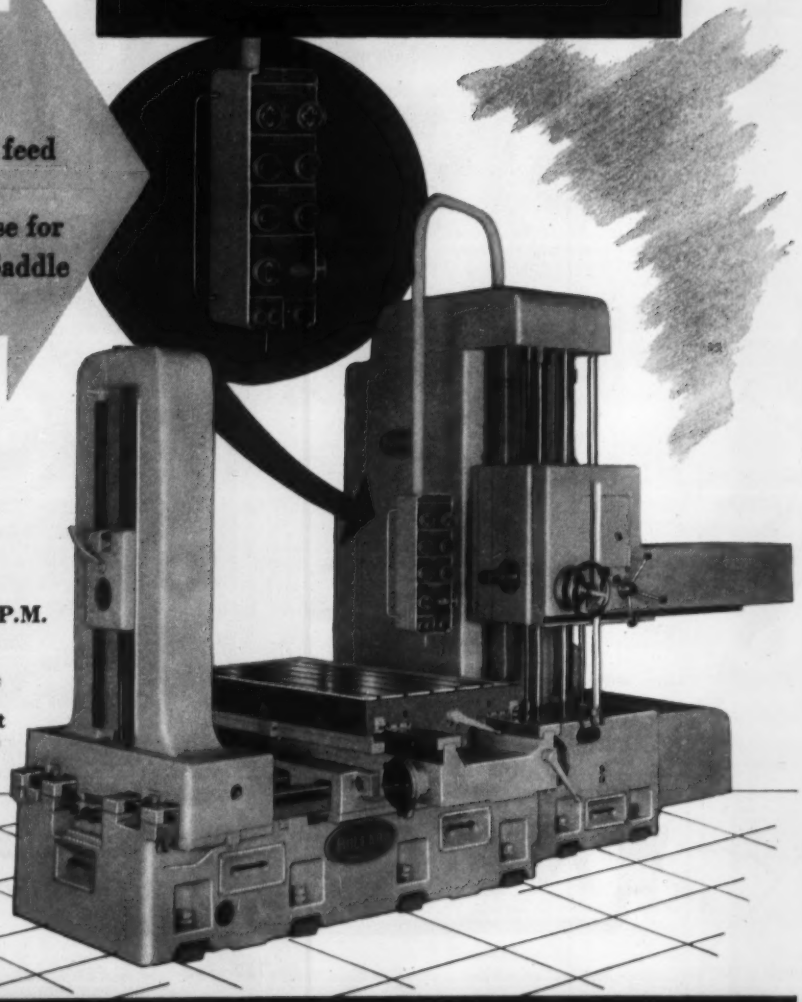
NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

NEWEST

SEVENTY FIFTH
BULLARD
ANNIVERSARY

3 11" HORIZONTAL BORING MILLING and DRILLING MACHINE

PENDANT CONTROL
Complete **machine control from a movable station for feed and speed selections, directional feed and traverse for Spindle, Head, Table and Saddle**



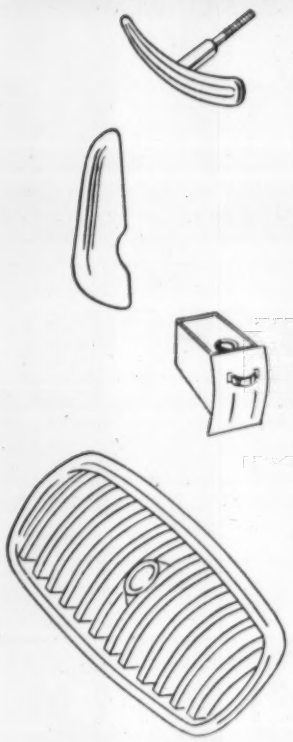
ADDITIONAL FEATURES

- Both Screw and Rack Feed to the spindle
- Massive 4-Way Bed, Head, Headpost and Rear Post for rigidity
- Spindle Speed up to **2000 R.P.M.**
- Replaceable Ways, chrome hardened, on Bed and Saddle
- Optical measuring equipment for head and table (optional)

FOR FULL INFORMATION CALL YOUR NEAREST BULLARD SALES OFFICE OR DISTRIBUTOR OR WRITE . . .

THE BULLARD COMPANY | BRIDGEPORT 2, CONNECTICUT

Another field report on "TRICLENE" D



BUMPER GUARDS being loaded into roller conveyor degreaser at Grand Rapids Metalcraft by worker Ben Kolenda.

THOROUGHLY CLEANED with TRICLENE D, bright bumper guards are removed at end of degreaser by James Holliday.

"TRICLENE® D makes vapor degreasing easier than ever . . . now we can put through a larger volume of work,"

Says C. Nesselroad, Mgr., Grand Rapids Metalcraft, Division F. L. Jacobs Co., Grand Rapids, Mich.

"We operate six degreasers—two manual and four conveyorized," continues Mr. Nesselroad, "and since we turn out as many as 150,000 parts per day, we've found we just can't *afford* to have trouble."

That's why Grand Rapids Metalcraft uses TRICLENE D trichlorethylene. With this rugged solvent, they've had consistently thorough, trouble-free degreasing of the automotive stampings they manufacture—bumper guards, brackets, ash trays and grill parts. And with TRICLENE D, their volume of work handled has shown an *increase* . . . and maintenance costs have *decreased*. Furthermore, Mr. Nesselroad concludes, "We've never found a degreasing job that TRICLENE D trichlorethylene couldn't do!"

Locked-in stabilizers give TRICLENE D unsurpassed resistance to *all* major causes of solvent deterioration—heat, light, air, acids and aluminum chloride—yet this rugged solvent contains nothing to harm even delicately machined metal surfaces. TRICLENE D retains its original high purity longer . . . continues to give *brighter cleaning of any metal* job after job, distillation after distillation. And remember, it costs no more!

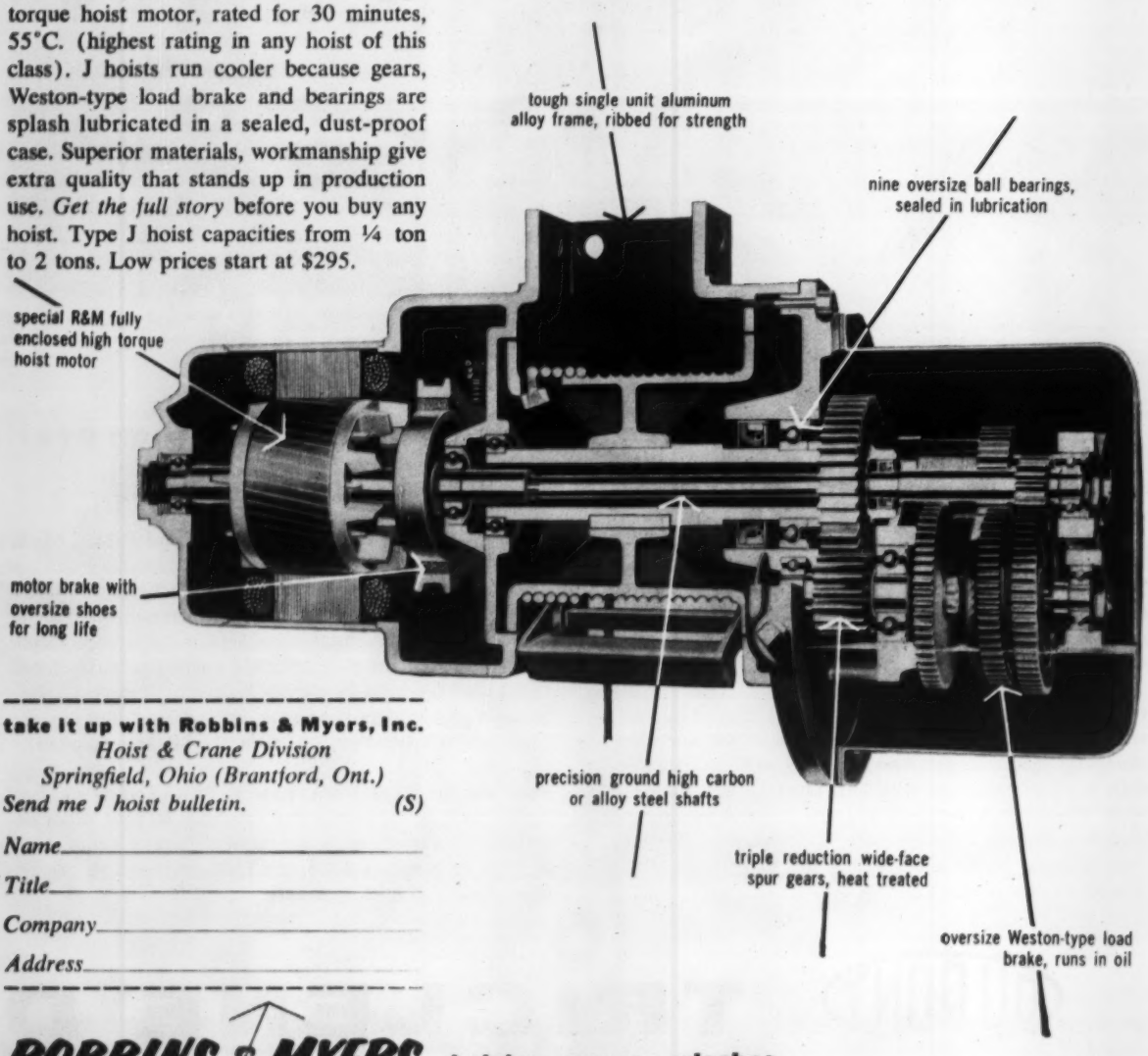
FOR MORE INFORMATION on TRICLENE D and how it can bring a new standard of efficiency to your vapor degreasing operation, write our nearest District Office. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

TRICLENE® D
TRICHLORETHYLENE

R&M J hoists give you the biggest quality lifting package at a reasonable cost, and here's why: First, there's no compromise on material—high strength carbon or alloy steel shafts and gears; tough, flexible plow steel cable; oversize bearings, load brake, and shafts—all last longer under punishing loads. No compromise on workmanship, either—each of the triple reduction spur gears is wide-faced, precision cut and heat treated; the motor is R&M's own high torque hoist motor, rated for 30 minutes, 55°C. (highest rating in any hoist of this class). J hoists run cooler because gears, Weston-type load brake and bearings are splash lubricated in a sealed, dust-proof case. Superior materials, workmanship give extra quality that stands up in production use. *Get the full story* before you buy any hoist. Type J hoist capacities from ¼ ton to 2 tons. Low prices start at $295.

buy value you can see


tough single unit aluminum alloy frame, ribbed for strength
nine oversize ball bearings, sealed in lubrication
special R&M fully enclosed high torque hoist motor
motor brake with oversize shoes for long life
precision ground high carbon or alloy steel shafts
triple reduction wide-face spur gears, heat treated
oversize Weston-type load brake, runs in oil

take it up with Robbins & Myers, Inc.
Hoist & Crane Division
Springfield, Ohio (Brantford, Ont.)
Send me J hoist bulletin. *(S)*

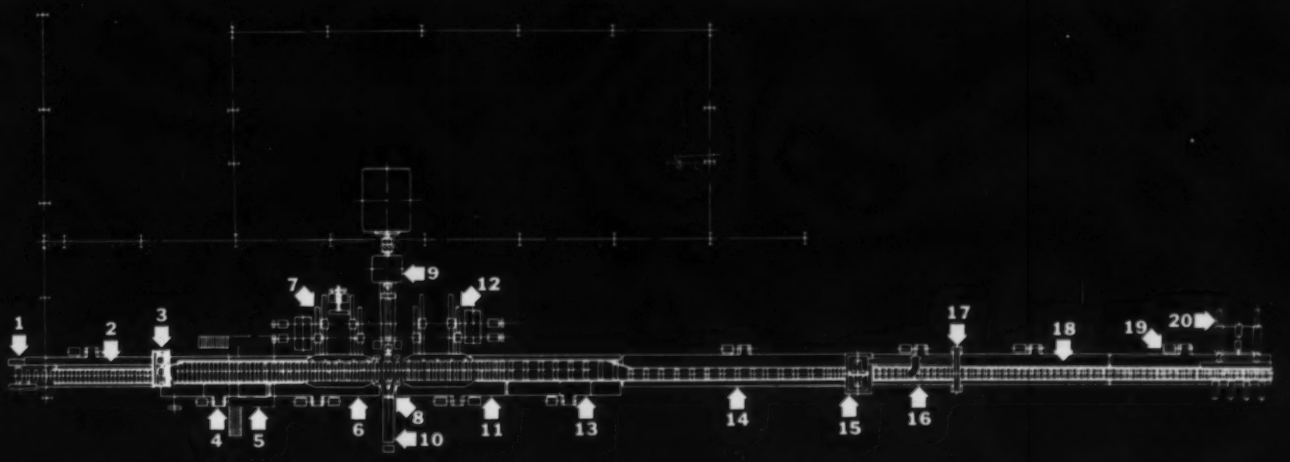
*Name*_____

*Title*_____

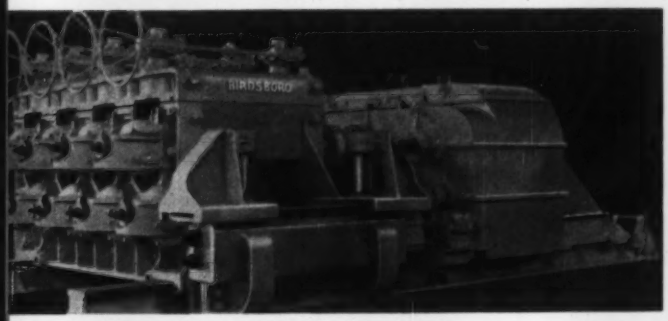
*Company*_____

*Address*_____

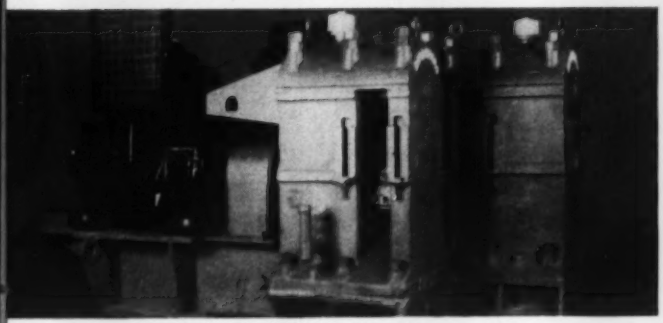
ROBBINS & MYERS **hoists • cranes • winches**



FROM COMPLETE MILLS . . . such as this 32" blooming mill layout



TO STRAIGHTENERS . . . . . TO ROUGHING MILLS



TO FLYING SHEARS . . . . . TO COOLING BEDS, for semi-finished products, and other auxiliary mill equipment

Designers and Builders of:

STEEL MILL MACHINERY
HYDRAULIC PRESSES
CRUSHING MACHINERY
SPECIAL MACHINERY
STEEL CASTINGS
Weldments "CAST-WELD" Design
ROLLS: Steel, Alloy Iron, Alloy Steel

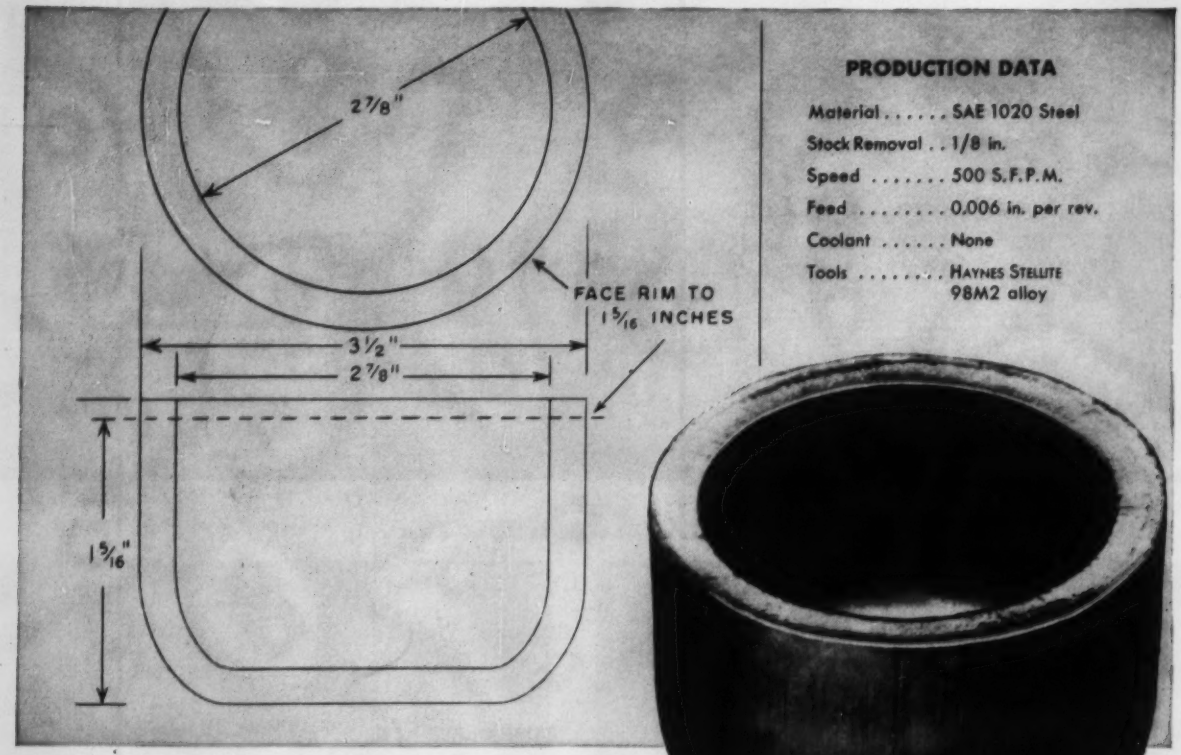
you get

MAXIMUM EFFICIENCY AND ECONOMY

from . . .

BIRDSBORO

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA. Offices in Birdsboro, Pa. and Pittsburgh, Pa.


2 7/8"
FACE RIM TO
1 5/16 INCHES
3 1/2"
2 7/8"
1 5/16"
PRODUCTION DATA
Material . . . . . SAE 1020 Steel
Stock Removal . . 1/8 in.
Speed . . . . . 500 S.F.P.M.
Feed . . . . . 0.006 in. per rev.
Coolant . . . . . None
Tools . . . . . HAYNES STELLITE 98M2 alloy

1,000 PIECES MACHINED PER GRIND ...despite rough, uneven cut

HAYNES STELLITE 98M2 tools machine over a thousand of these torque converter cups between grinds. The cups are deep drawn from SAE 1020 steel, and are plunge cut. The area to be machined is rough and uneven. The HAYNES STELLITE tools operate for a full eight-hour shift, at a speed of 500 surface feet per minute, without chipping or spalling. No coolant is used.

HAYNES STELLITE tools are successful on applications like this one because they have good impact strength, high compressive strength, and their cutting edges remain hard and sharp even when red hot. This same combination of properties makes them valuable on all machining jobs. They remove metal fast. They can be used at high speeds with comparatively high feed rates, and they can take deep cuts.

For information on how HAYNES STELLITE tools can help speed up your machining jobs, write for the booklet, "HAYNES STELLITE Metal-Cutting Tools." It gives helpful information on chip formation, tool design, and the machinability of metals.

HAYNES TRADE-MARK ALLOYS

HAYNES STELLITE COMPANY

A Division of Union Carbide and Carbon Corporation

UCC

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"Haynes" and "Haynes Stellite" are registered trade-marks of Union Carbide and Carbon Corporation.

SUITABLE FOR FRAMING...

Suitable for Reynolds Aluminum Window Frames to be specific!

Reynolds makes lots and lots of window frames for lots and lots of people . . . just because they *are* so suitable!

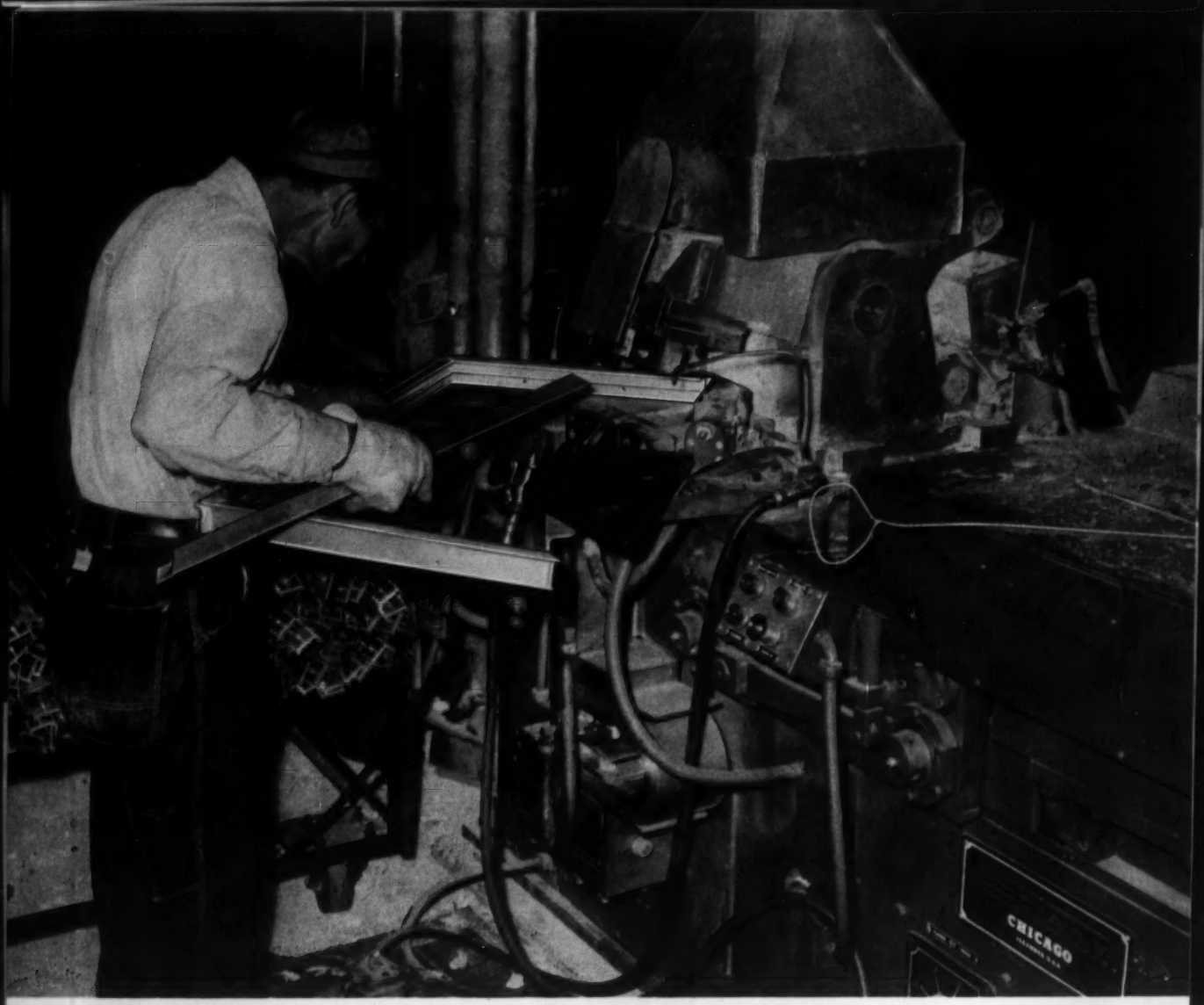
That so-called "suitability" is a combination of proper design and appealing price. As *you* well know, design and price depend on the method of fabrication and its cost. And suitably enough, Reynolds uses Sciaky Resistance Welding to produce those frames.

If *you* combine good design and appealing price like Reynolds does, you'll have "lots and lots" of customers to make your efforts profitable, too!

SCIAKY

Largest Manufacturers of Resistance Welding Machines in the World

Don't take our word for it — turn the page and look at the facts for yourself.



Production increased 66%, unit costs reduced 25% with Sciaky Resistance Welding

How old is "antique"?

Recent Sciaky technical achievement in resistance welder design may make welders only five years old obsolete.

Production limitations, high operating cost, and greater maintenance requirements make these "antiques" expensive to own. You can't be competitive if the cost of your product won't let you compete.

Aluminum window frame production jumped 66% with two Sciaky 200 KVA Flash Butt Welders at the Reynolds Metals fabricating division in Louisville, Kentucky.

Three arc welder set-ups and five expensive jigs were eliminated. Labor demand for the welding operation was reduced 43%, releasing skilled men for other important work.

The Sciaky resistance welders now provide a completely water tight frame. Rejects are virtually eliminated. Maintenance has been reduced to minimum routine service. With all these advantages, it's easy to understand the 25% lower unit production cost.

"Resistance Welding At Work," Vol. 4 No. 7, details the Reynolds story. Write today for your free copy of this dramatic proof of Sciaky basic design thinking—welders to do *more useful work* at *lowest operating cost* with *maximum reliability.*

Largest Manufacturers of Resistance Welding Machines in the World

SCIAKY®

Sciaky Bros., Inc., 4912 West 67th Street, Chicago 38, Ill., Portsmouth 7-5600

Gas heater by Temco, Inc., Nashville, Tenn.

Expanded metal grille *DELIVERS HEAT* *ENHANCES STYLE* in new "cool cabinet" heaters

Above is one in a line of famous heaters, recently redesigned for maximum heating efficiency, and to bring modern styling to the gas heating field. Says the manufacturer, "The styling of the new heaters is enhanced by a 'television-screen' grille of expanded metal."

The two Penmetal expanded metal grilles have a double function. Besides being harmonious with modern home furnishings, they permit the free passage of heat. This heater combines the advantages of radiant and circulating heaters, to give faster heat distribution.

Penmetal expanded metal is sheet metal slit and expanded to as much as ten times its original width. Up to 80% lighter than solid sheet of the same dimensions, the diamond truss pattern adds rigidity and strength yet permits the passage of light, heat and sound. Available in carbon steel, aluminum, stainless steel, Monel, Inconel and other metals; large or small mesh; light or heavy gauge.

Perhaps you, too, can make a better product with Penmetal expanded metal. Send for 28-page catalog giving mesh sizes, weights and dimensions and suggested uses for this versatile material.

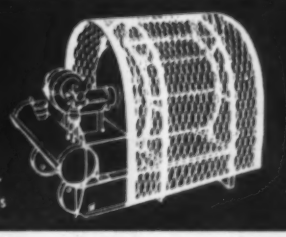
PENN METAL COMPANY, INC.

General Sales Office: 205 East 42nd Street, New York 17, N. Y.
Plant: Parkersburg, W. Va.

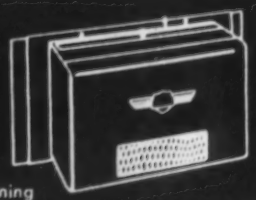
Penmetal

PM-64

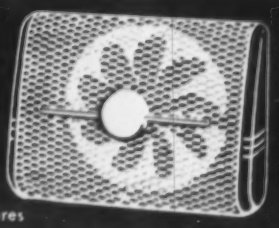
PENMETAL EXPANDED METAL IS ALSO USED FOR:



Heater Guards



Air Conditioning Unit Grilles



Fan Enclosures

MASS PRODUCTION OF STEEL PRODUCTS at Republic goes beyond fasteners. Take this steel building, for example, made by Republic's Truscon Steel Division. It is one of many standard styles and sizes produced by the world's largest manufacturer of metal building products. Truscon Steel Buildings offer the economies of standardization—plus fire protection, ease and speed of erection, low upkeep, high investment value. They're low in cost and can be disassembled and re-erected as space-needs change.

TIN PLATE IS ANOTHER EXAMPLE OF REPUBLIC'S DIVERSITY of operation. Electrolytic and coke tin plate for all types of cans—food, oil, paint, beverage, etc.,— is made by the cold reduction process which gives all the qualities necessary for making tin containers on high-speed automatic machines. Black plate is also available in standard grades for such applications as lacquered cans and light stampings.

REPUBLIC IS ALSO A MAJOR PRODUCER OF HOT ROLLED BARS, a substantial portion of which are used in forgings, such as these. Forging stock is available in all commercial grades of carbon, alloy and stainless steels. Republic is prepared to supply standard hot rolled shapes as well as special sections.

Types

REPUBLIC MAKES

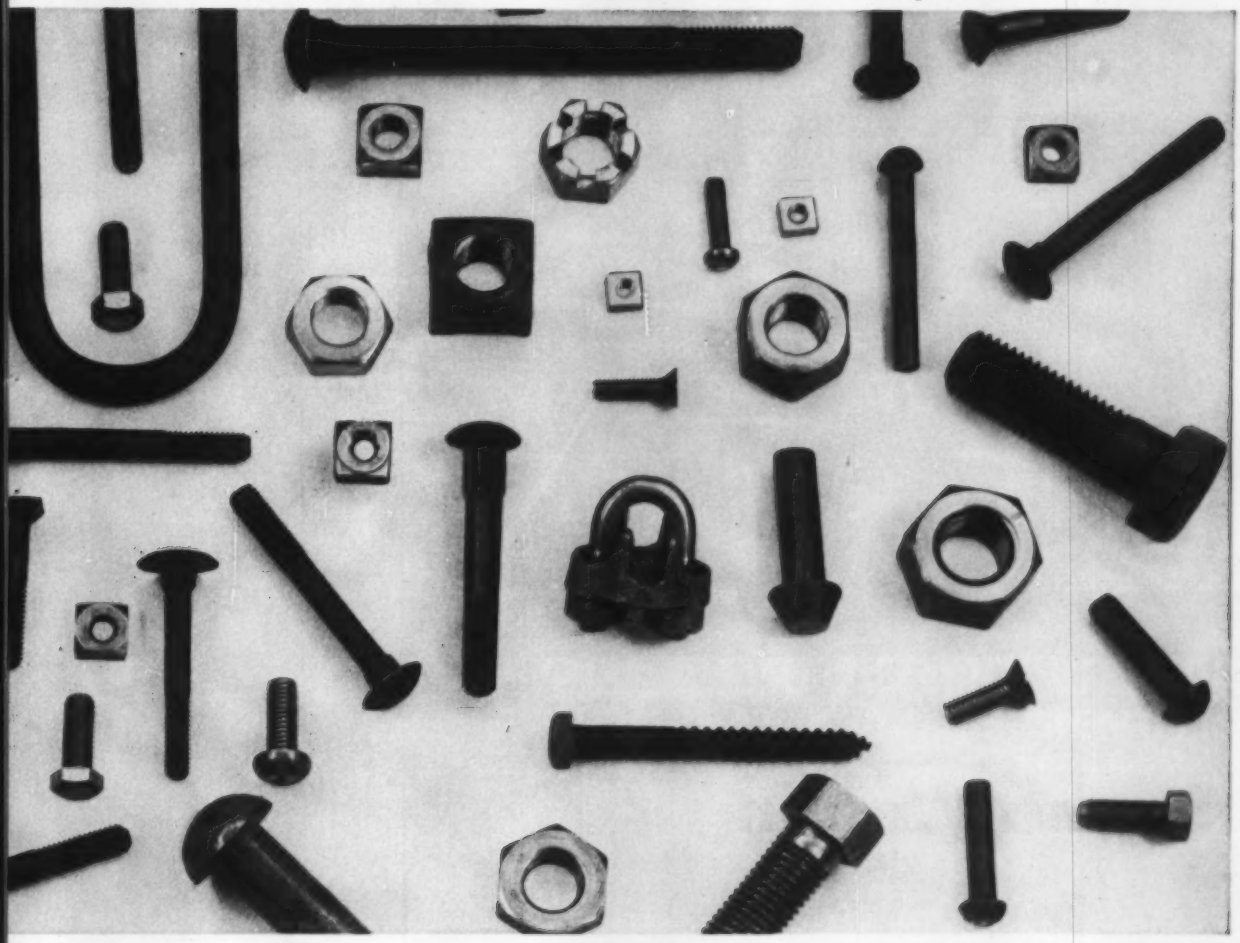
This selection of fasteners represents only a small part of the more than 20,000 regular types and sizes made and stocked by Republic.

To meet the varied requirements of all types of industry, Republic operates the country's largest, most modern and diversified fastener plant under one roof. Daily capacity is 15,000,000 fasteners. This big-volume production includes everything from machine bolts, cap screws, hot and cold punched nuts to rivets, sheet metal screws, track bolts, alloy studs.

In addition, Republic produces over 8,000 special types and sizes of fasteners—like mine roof bolts,

REPUBLIC

World's Widest Range of Standard



and Sizes?

AND STOCKS OVER 20,000

"Nylok" nuts, high-strength bolts.

Republic takes no chances on quality. It's controlled at every stage of production—from raw materials to finished fastener. Republic uses its own ore, makes its own steel (over 50 analyses of carbon, alloy and stainless), employs the most modern machines and procedures.

If you are interested in quality, uniformity, delivery, dependability, ease of application and long service life—you will get them all in Republic Fasteners.

Contact your industrial distributor. Or mail the coupon for more information.

STEEL

Steels and Steel Products

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REPUBLIC STEEL CORPORATION
3120 East 45th Street
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Please send more information on:

☐ Fasteners ☐ Truscon Steel Buildings
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Company_____

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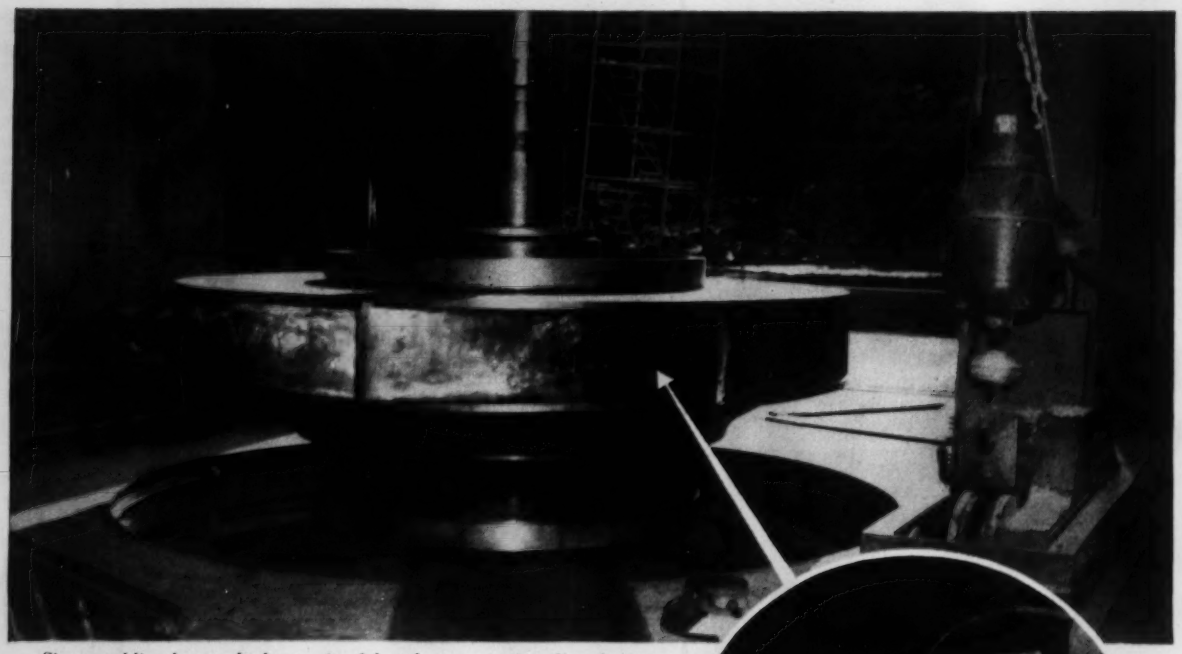


Sigma welding has made the repair of these large pump impellers faster and more economical. Finished welds are a sound, homogeneous bond.

Sigma Welding Saves $5,000 per unit

Speeds repair of world's second largest pumps . . .

During operation, giant 20 ton manganese bronze pump impellers like this one, suffer cracks ranging in size from small sand inclusions, to cuts over a foot long. By using sigma welding, it is now possible to make high quality, on the spot repairs without disassembling the units — this results in an immediate savings of 5,000 dollars per pump.

Shown above is a typical repair operation on one of the 22,000 hp. electric motor driven pumps. This crack is 11-in. long, 2½-in. wide, and 2-in. deep. The four pegs adjacent to the crack are strain check points. Frequent measurements made of the distance between them determines welding duration and the peening sequence necessary to control distortion which in this operation was less than 0.005 inch. The completed weld made with aluminum bronze wire has an excellent surface appearance and color match.

You can speed production and cut costs in your operations—find out more about sigma welding from your local LINDE representative . . . Start saving now, call him today.

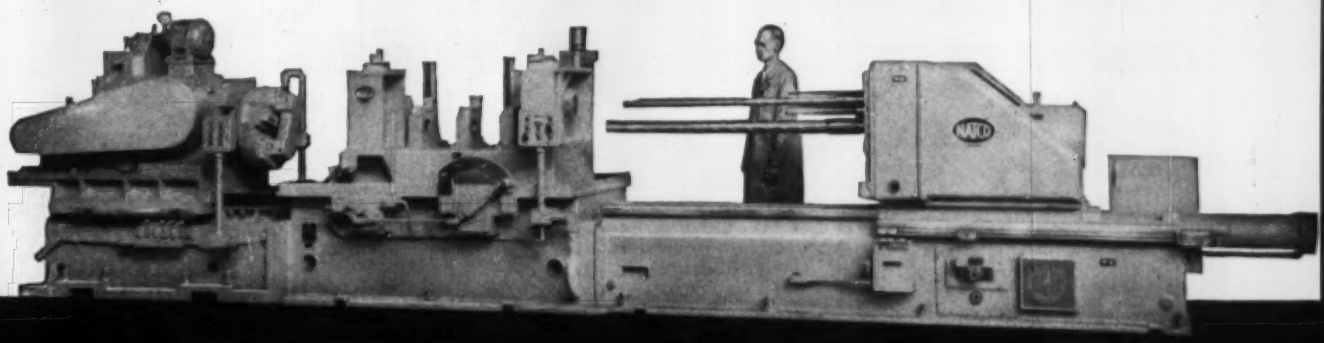
Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: LINDE AIR PRODUCTS COMPANY
Division of Union Carbide Canada Limited, Toronto
(formerly Dominion Oxygen Company)

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

Linde
Trade-Mark

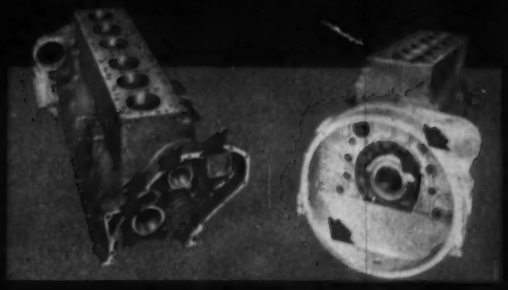
NEW NATCO BORFACE

SPEEDY, PRECISION PRODUCTION CUTS DIESEL ENGINE BLOCK COSTS



CAM and CRANK FINISH BORING and FACING OPERATIONS DONE SIMULTANEOUSLY ON 4.3 PARTS PER HOUR AT 85% EFFICIENCY!

New NATCO BORFACE machine, employing two heads, speeds production of diesel engine blocks by finish boring cam and crank holes and boring and cross-feed facing flywheel case simultaneously. The locations and diameters of the straight alignment bores are held to extremely close tolerances. The finished facing on the flywheel housing and cover is held square with the crankshaft bore to within .0025" total indicator reading. These tolerances are made possible by the built-in accuracy of the NATCO BORFACE and because all operations are performed with one locating of the part.



RIGHT HAND HEAD OPERATIONS
Finish bore 7 (in-line) main bearings
Finish bore oil retainer and cover
Finish bore 4 (in-line) camshaft bearing inserts
Finish bore 2 holes

LEFT HAND HEAD OPERATIONS
Rough, semi-finish and finish bore and rough, semi-finish and finish cross-feed face flywheel housing and cover.

Call a Natco Field Engineer

to help you solve your problems in Drilling, Boring, Facing and Tapping

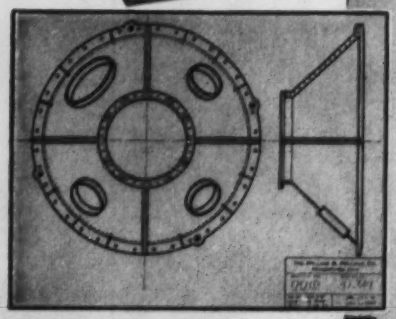
NATCO

NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Indiana

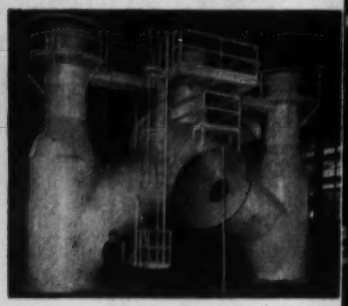
Branch Offices

CHICAGO, Room 202, 6429 W. North Ave., Oak Park • DETROIT, 10138 W. McNichols Rd.
BUFFALO, 1807 Elmwood Ave. • NEW YORK, 35 Beechwood Ave., Mount Vernon

POLLOCK

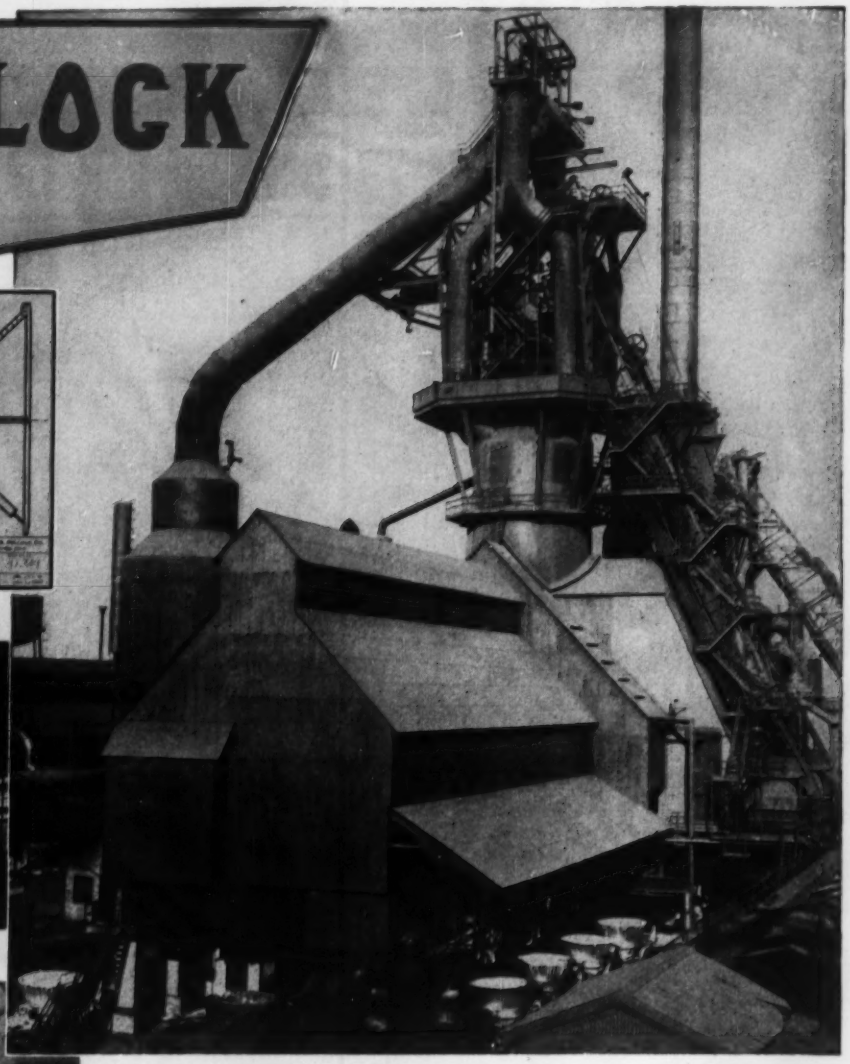


ENGINEERING



SHOP FABRICATION

FIELD ERECTION



Correlating the skills of Pollock engineering, fabrication and field erection to specific operational requirements of The Youngstown Sheet & Tube Company are evidenced in this blast furnace. In addition to furnishing the steel work for this blast furnace, Pollock designed and built auxiliary equipment, including the hot metal ladle cars and cinder cars shown in the above picture. The experience which the Pollock Company has gathered in over eighty-five years is available to you in planning your new projects.

Blast furnace STEEL WORK

POLLOCK

THE WILLIAM B. POLLOCK COMPANY

YOUNGSTOWN, OHIO

STEEL PLATE CONSTRUCTION • ENGINEERS • FABRICATORS • ERECTORS

BLAST FURNACES • HOT METAL CARS AND LADLES • CINDER AND SLAG CARS • INGOT MOULD CARS • CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

U. S. ROYALITE WINS ANOTHER CASE!

"Impact" couldn't crack it!

Exhibit "A"—The ROYALITE case of the new Revere "777" 8 mm. portable projector, is cleverly designed by Revere Engineers as an integral part of the machine. The removable cover contains a ribbed inner liner to which is riveted a reel support, cord retainer and lock. Revere, a user of Royalite cases since 1949, has pioneered in engineering its products for functional beauty.

TO WIN, time after time, in the trial of use and abuse, any "portable" must have an eye-appealing case that stands up under hard knocks. A case like that of the fine, precision-built "777" portable projector, *formed from* U. S. ROYALITE.

This tough, versatile fabricating material has the structural rigidity of plastic fortified with rubber for needed impact resistance.

Supplied as a thermoplastic sheet, it is easily formed to complicated shapes with sharp detail on low-cost tooling, and for limited runs or prototypes, dies can be quickly and inexpensively made of wood or resin as well as metal. Needed supports and dividers to receive accessory parts can be formed simultaneously with the case, saving assembly operations.

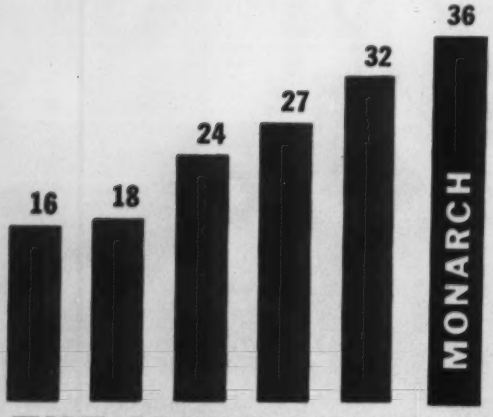
U. S. Royalite thermoplastic sheets can be obtained in attractive standard or special built-in colors with glossy-smooth or dull textures. Various degrees of rigidity are obtainable, as well as flame-resistant (self-extinguishing) material. Contact us at once to see how Royalite can be turned into cases or covers for *your product*... cases that combine beauty, utility, and economy as never before. United States Rubber Company, 2638 Pulaski Road, Chicago 39, Ill.

U.S. ROYALITE
TOUGH, VERSATILE FABRICATING MATERIAL

US RUBBER **United States Rubber**

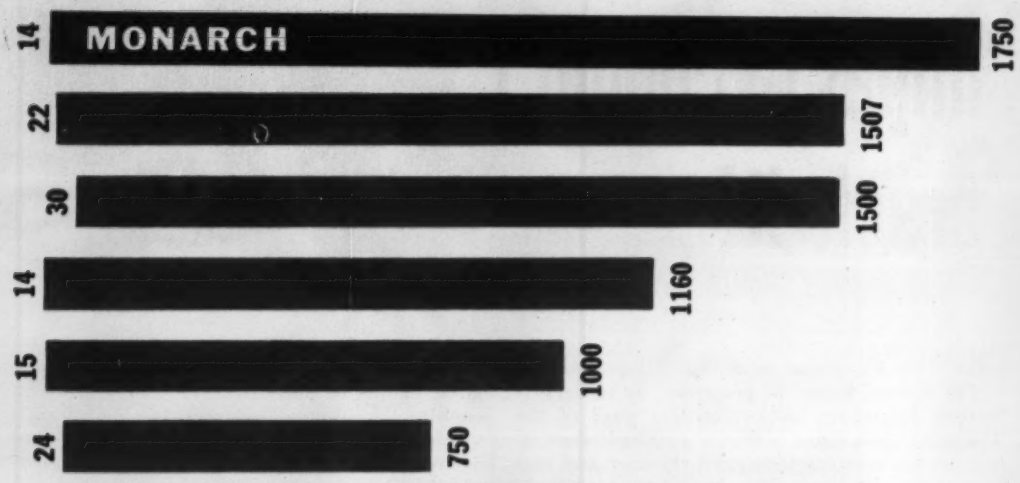
TALK ABOUT SPEEDS!

There's No Matching the Monarch Preselector Dyna-Shift



THE MOST SPEEDS—36

Unique Speed PRESELECTOR DYNA-SHIFT



UNEQUALED RANGE—14 to 1750

Surface Cutting Speed! These three words are the key to top efficiency in the operation of *any* lathe.

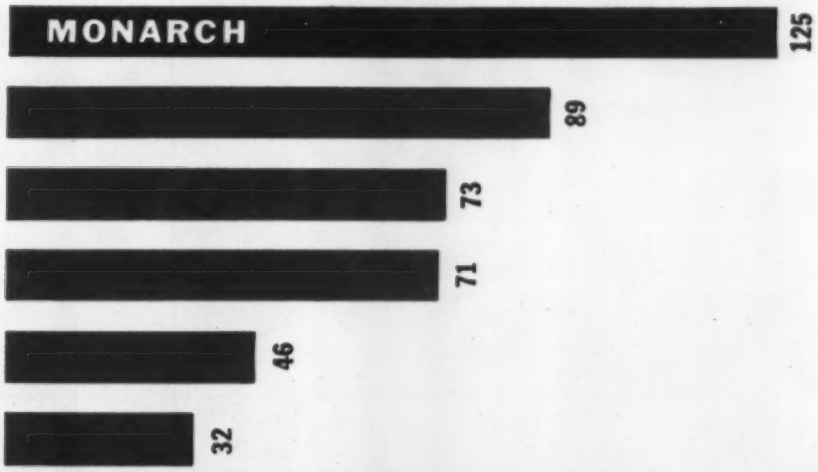
Certainly it's true, you say. But why bring that up? Because only now is a lathe available to give you, practically the correct surface speed, diameter after diameter, piece after piece. That lathe is the new Monarch Series 62 Preselector Dyna-Shift.

It has 36 speeds in a range of 14 to 1750 RPM. Headstock ratio is 125 to 1. And it has *speed preselection.* Here at last is a machine with a standard speed range low enough, high enough and with plenty of speeds in between to make unnecessary a whole assortment of special ranges. With this one standard range you have the power to turn efficiently any part within the work capacity of the lathe.

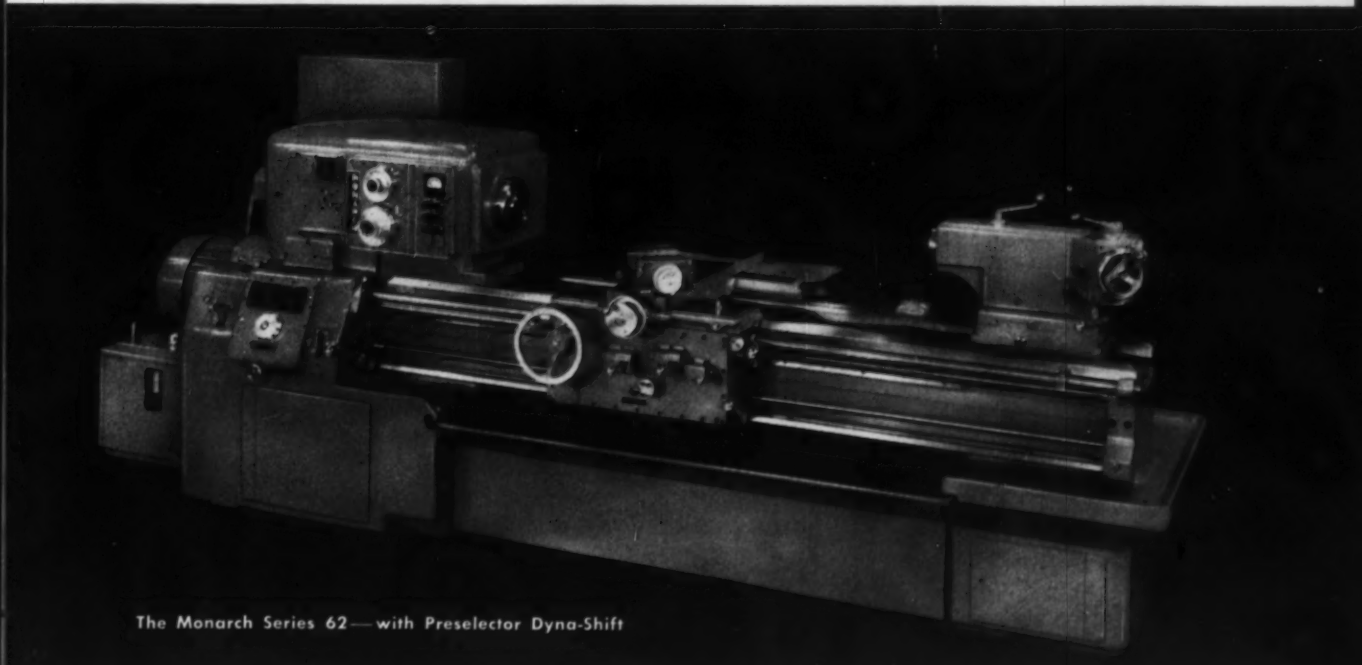
The Dyna-Shift feature makes it unnecessary for the operator ever to figure the R.P.M. he needs for the desired surface speed. He never has to be a calculating machine. He never has to get bleary-eyed figuring a lever setting combination from a complex index plate. He never has to be a color matcher. He never has to set a series of levers in a variety of positions as indicated by the index plate.

All he does is set two large dials on the Preselector Dyna-Shift—one for the work diameter to be turned, the other for the surface speed needed. The machine calculates the necessary R.P.M. and makes the shift automatically. With the preselection feature he may preset up to 6 or more different diameters and set up the shift for each while the machine is turning the previous diameter.

Nowhere but on the Monarch Series 62 Preselector Dyna-Shift can you get this combination. And no other machine can be kept under full load during the entire machining cycle for the utmost in metal removing efficiency. There's an area of cost reduction you cannot afford to overlook any longer. Ask us about it. ***The Monarch Machine Tool Co., Sidney, Ohio.***



GREATEST RATIO—125 to 1



The Monarch Series 62—with Preselector Dyna-Shift

PRODUCTION PLUS

The Monarch Series 62

Increases Productivity up to 25%*
Increases Tool Life up to 50%*

**Figures based on studies comparing step shaft output of Preselector Dyna-Shift with that of a conventional 16-speed headstock lathe.*

Monarch
TURNING MACHINES

THE MONARCH MACHINE TOOL COMPANY, Sidney, Ohio

Gentlemen:

☐ I am interested in your Series 62 story. Please send me your illustrated Booklet #1505 with complete data.

☐ Please have a Monarch sales engineer call on me.

NAME_____ TITLE_____

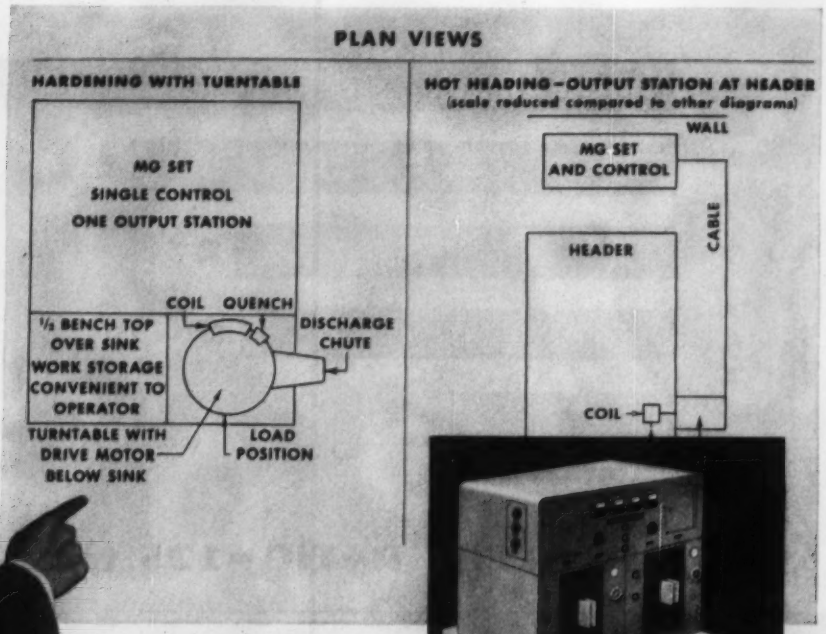
COMPANY_____

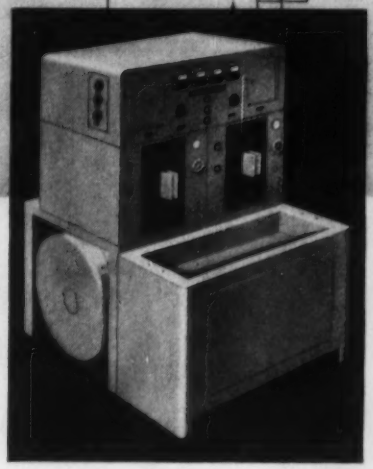
ADDRESS_____

CITY_____ ZONE_____ STATE_____

New 30-kw

induction heater . . .





32 arrangements to meet your own production setups

Simplified building-block design of the new Westinghouse 30-kw induction heater brings you unequaled flexibility. You get 32 regular combinations, plus a number of special arrangements to fulfill your low-power induction heating jobs. Result: induction heating changeovers can be made quickly, easily to adapt to your varying production arrangements.

Easy To Use—front of worktable, free of controls, can be used for mounting work-handling equipment. Instruments at eye level for easy readability. Buy the equipment you want, adapt it when your needs change: single to two-station operation—sink to bench top—high-voltage to low-voltage output—grouped as a compact unit to remotely located output stations.

Versatile—you get a custom-built installation of standardized equipment to handle a wide variety of applications. Unit ideal for hardening, annealing, brazing or soldering.

Equipment consists of four basic units: (1) 30-kw, water-cooled, 10,000-cycle m-g set, (2) generator control cabinet, (3) high-frequency output cabinet, (4) worktable.

For more information about improving your induction heating operations, call *The Man With The Facts*—your Westinghouse sales engineer. Ask him for your copy of booklet B-6555, or write Westinghouse Electric Corporation, 3 Gateway Center, Pittsburgh 30, Pa. J-02298

YOU CAN BE SURE...IF IT'S

Westinghouse

"excellent finish"

SURVEY

DESCRIPTION OF WORK
Surface grinding tool bits to size on production basis.

SEGMENTS
Simonds Abrasive Company NA 36-G9-B3

PERFORMANCE
Excellent finish plus long segment life. Performance unequalled by other makes of segments over many years.

SIMONDS ABRASIVE CO.

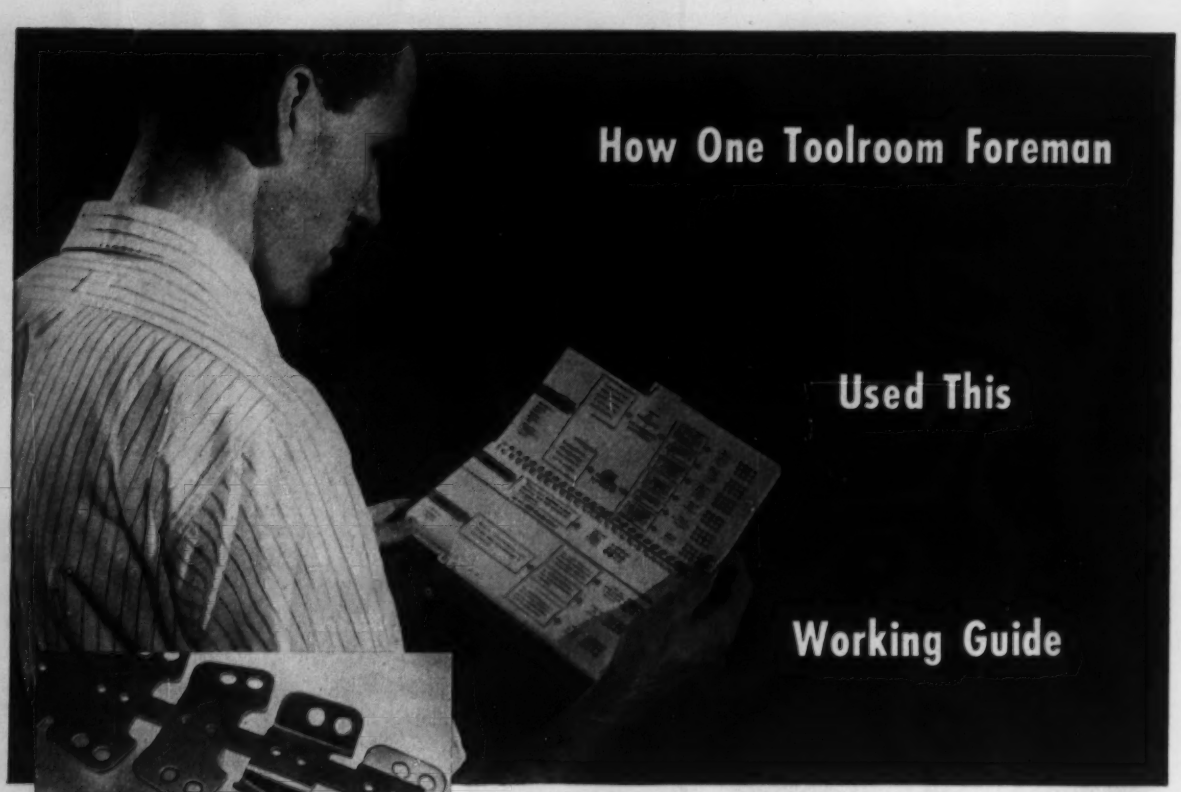
abrasive segments

Superior results plus long productive use! This is the constantly recurring theme of surveys covering jobs on which Simonds Segments are used. You'll find them equally productive and durable on your jobs.

SIMONDS ABRASIVE COMPANY • PHILADELPHIA 37, PA.

EXTRA SAVINGS from your SIMONDS DISTRIBUTOR
STOCK · SERVICE KNOW-HOW

Branch Warehouses: Boston, Detroit, Chicago, Portland, San Francisco • Distributors in Principal Cities
Division of Simonds Saw and Steel Co., Fitchburg, Mass. • Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Quebec, Lion Grinding Wheels Div., Brockville, Ont. and Simonds Canada Abrasive Co., Ltd., Arvida, Quebec



Job: Punch that blanks stampings from SAE 1010 strip, .062" thick.

Problem: The punch is so unbalanced in design that safety in hardening is vital. Also, the punch is shear fitted to the die, and hardening accuracy is necessary to avoid expensive adjustments after heat treating. Other die steels were tried, but they either broke or changed size too much.

Solution: At this point the Toolroom Foreman called in Carpenter and started to become more familiar with the Matched Tool and Die Steel Manual. The Manual pointed to Carpenter *Vega* (Air-Tough) Die Steel for the punch. Now they're coming through right on the nose. Moreover, production between grinds has jumped from about 10,000 to 50,000 stampings. And the Foreman says that from here on, all his tools and dies will be made from Carpenter Matched Tool and Die Steels. (Write for a more detailed Field Report on this job.)

. . . To Increase Tooling Productivity

This is for the man responsible for tools and dies who looks at a diemaking job with these thoughts:

"How can I make it *easier?*"

"How can I avoid costly *heat treating hazards?*"

"What can I do to *improve the job?*"

If you're that man, Carpenter wants to help. We offer you plain, *practical* help based on almost 70 years' experience working with other men who feel like you do.

How does it pay off? Look at a typical example shown to the left! And your Carpenter representative can show you many more Field Reports of other interesting jobs.

Much of this help is packed into a 189-page working guide . . . Carpenter's "Matched Tool and Die Steel Manual". And that's only part of the program . . . a program backed by *dependable* die steels developed in Carpenter Research Laboratories with a long record of pioneering in new and improved steels.

We're ready to work with you, now. A call to your nearest Carpenter Mill-Branch Warehouse, Office or Distributor will tell us you are, too.

Carpenter STEEL — Matched Tool and Die Steels

IMMEDIATE DELIVERY from local warehouse stocks
THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.
Export Department: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

7 benefits received by switch to STANOSTAMP *Compound C*

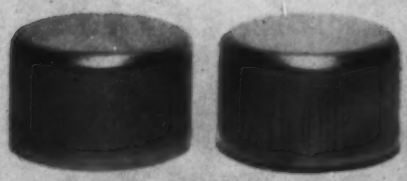
Jagemann Stamping Company, Manitowoc, Wisconsin, benefited seven ways by switching to STANOSTAMP Compound C. Finished ferrules drawn from 19 gauge cold roll steel were being badly scored. At the same time dies were being scratched and excessive heat experienced in the press. Standard Oil lubrication specialist R. E. O'Brien suggested STANOSTAMP. The result:

1. Production increased 20%
2. Die maintenance reduced 30%
3. Spoilage reduced
4. Finish improved
5. Galling minimized
6. Cooler machine operation
7. Washability improved

The results add up to this: There is a combination in the field of industrial lubrication that is hard to beat. It is (1) Standard Oil lubrication specialists capable of giving technical help and (2) Top quality products *that deliver results.*

STANOSTAMP Compound C is a water emulsifiable paste for heavy drawing operations. It contains an inert, non-abrasive mineral filler for protection of dies and work, is readily cleaned from work in conventional washing equipment. In the Midwest, your nearby Standard Oil lubrication specialist will be glad to tell you more about STANOSTAMP. Call him. Or contact: Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Father and son inspect ferrules. William P. Jagemann (left), President, and son William T. Jagemann note improved finish on work produced using STANOSTAMP.



Air hose ferrules. One at right produced before switch to STANOSTAMP, one at left produced after conversion to this forming compound. Scoring of dies as well as work occurred before switch.

STANDARD OIL COMPANY
(Indiana)

STANDARD

GET EXTRA SUB-HEARTH

SAFETY AND LONGER LIFE

WITH KAISER PERICLASE D-S BRICK →

THIS superior brick has been *especially designed* to withstand sub-hearth conditions. Thus, it gives maximum protection against costly breakthroughs and provides longer sub-hearth life.

Steel men agree on the important properties for a sub-hearth brick. They are all found in Kaiser Periclase D-S Brick.

High MgO (more than 95%) is achieved through the use of pre-shrunk, accurately sized Periclase grains derived from sea-water magnesia. Absence of chrome eliminates the reduction of chromium oxide and damage to the refractory structure.

Low iron content minimizes refractory damage from alternate oxidation and reduction of iron oxide and other iron compounds. Absence of calcium oxide prevents damage caused by slaking during slow heat-ups or while furnace is idle.

With all its many advantages, Kaiser Periclase D-S Brick gives you the ultimate in sub-hearth safety and durability—*yet costs no more!*

Call or write Kaiser Chemicals Division, *Kaiser Aluminum & Chemical Sales, Inc. Regional Sales Offices: 1924 Broadway,* OAKLAND *12, California . . . First National Tower,* AKRON *8, Ohio . . . 518 Calumet Bldg., 5231 Hohman Avenue, Hammond, Indiana* (CHICAGO).

For the ultimate in steel furnace refractories . . .

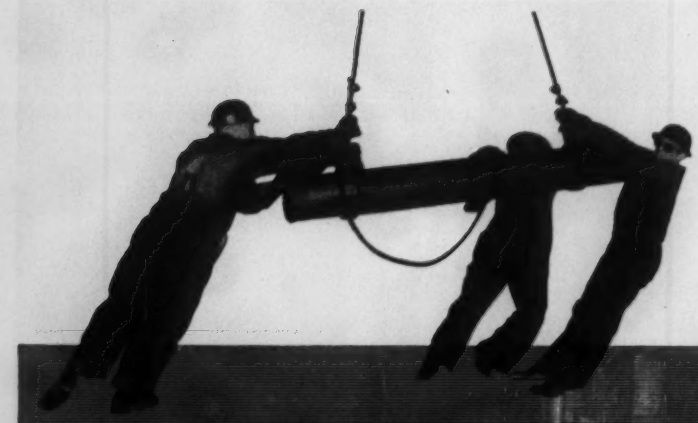
Kaiser PERICLASE Brick for the Steel Industry:
• Kaiser Periclase D-S Brick • Kaiser Periclase Chrome Brick • Kaiser Chrome Periclase Brick
Now available! A companion mortar for Kaiser D-S Brick. High purity periclase composition and maximum workability.
INSTALLATION ADVICE ON REQUEST

think of Kaiser Chemicals

Pioneers in Modern Basic Refractories

CHEMICALS KAISER REFRACTORIES

Refractory Brick, Ramming Materials, Castables & Mortars • Magnesite • Periclase • Deadburned Dolomite



IF YOU ARE STILL LOSING 20 MAN-HOURS DRIVING KEYS . . .

THE NEW ERIE KEY DRIVER

lets you drive keys safely . . . . . in one man-hour

STOP DRIVING A SPIKE WITH A TACK HAMMER!

Now, when driving die and sow block keys in forge hammers, the new Erie Key Driver will do with *two* men in *15* minutes what used to take *5* men (don't forget the crane operator) several hours! Let Erie Foundry Co. show you how to save maintenance man-hours, eliminate wasteful down time, reduce accidents.

THE NEW ERIE KEY DRIVER IS SAFE

There's no danger of ram end-swing, no glancing blows, minimum mushrooming of keys. Every Erie Key Driver blow is true. One user says,* "The incidence of personal injury and property damage has been reduced to a relatively negligible nature by using the very efficient Erie Key Driver."

**Name furnished upon request.*

Write for Bulletin No. 356 today

ERIE FOUNDRY CO. ERIE, PA.

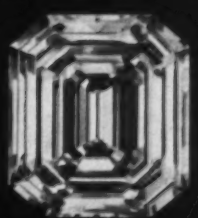
THE GREATEST NAME IN FORGE HAMMERS

ERIE

Here is perfection!

ROEBLING high carbon wire is unsurpassed for industry today. Roebling wire is absolutely true to specifications ... absolutely uniform in gauge and finish. Manufacturers who try Roebling wire once, become Roebling customers from then on.

You *pay* for the best when you buy high carbon wire. Make sure that you *get* it! Always specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.



The Jonker, world's largest emerald-cut diamond.

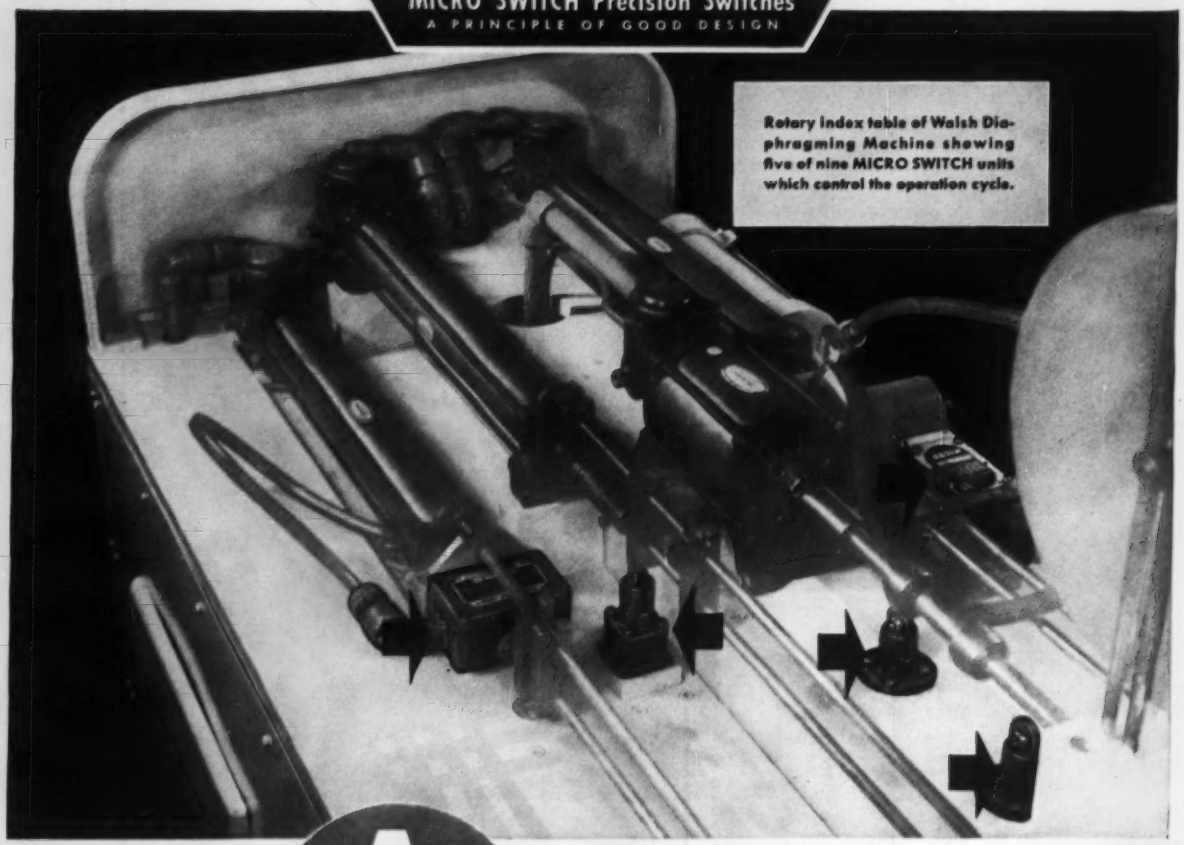
ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK

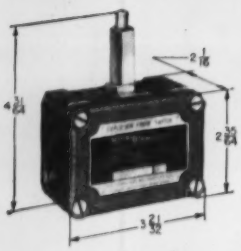
MICRO SWITCH Precision Switches

A PRINCIPLE OF GOOD DESIGN

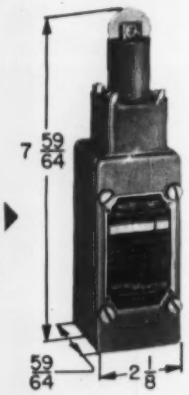


Rotary index table of Walsh Diaphragming Machine showing five of nine MICRO SWITCH units which control the operation cycle.

Artillery Shell Primers made automatically—with help of MICRO SWITCH explosion-proof switches



Explosion-proof switch with pin plunger actuator



Heavy duty explosion-proof limit switch with roller plunger actuator

Use of nine MICRO SWITCH explosion-proof switches in this Walsh Diaphragming Machine is a typical example of the use of these versatile switches in the development of automatic machinery.

In one stream-lined operation, the MICRO SWITCH units eliminate all hand work as the machine lacquers the interior of the primer body; punches and forms diaphragms from a paper roll; seats them to proper depth and provides final inspection.

Designed by Walsh, Inc., Chicago engineering firm, the machine is used at government installations to prepare primers for artillery shells. All the operations are performed in an explosive lacquer-laden atmosphere. Nine MICRO SWITCH explosion-proof switches, of two different types, control the operation cycle.

Whatever your design problem, whatever your switch requirement, your design staff will find MICRO SWITCH engineering service a valuable ally. There are branches in 20 key cities. Call the one nearest you.

A complete line of snap-action and mercury switches

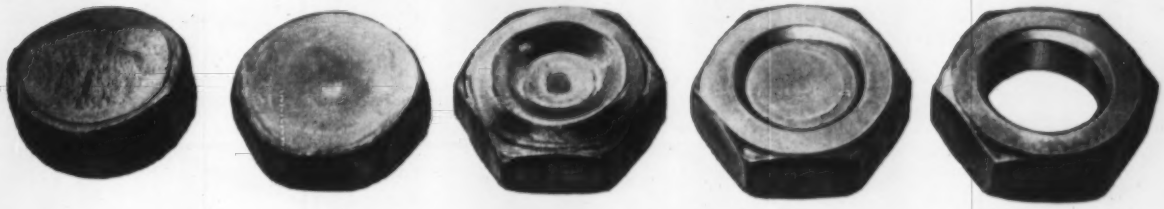
MICRO SWITCH provides a complete line of extremely reliable, small-size, high-capacity, snap-action precision switches and mercury switches. Available in a wide variety of sizes, shapes, weights, actuators and electrical characteristics. For all types of electrical controls.

MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS

YOUNGSTOWN
STEEL ROUNDS
used in manufacture of quality RB&W nuts

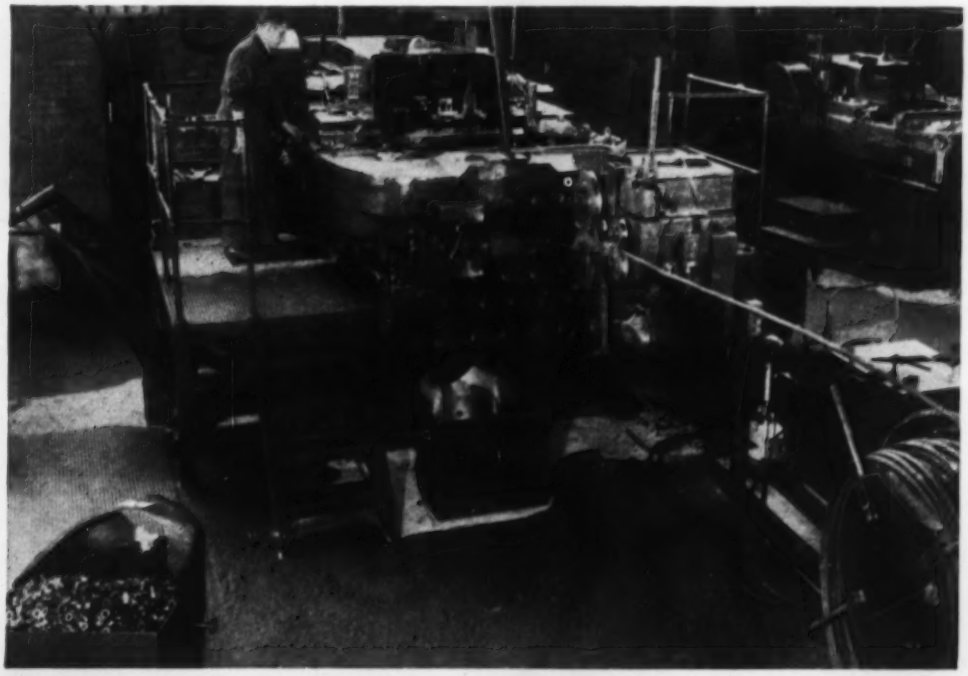


Russell, Burdsall & Ward Bolt and Nut Company pride themselves on the strength of their bolts and nuts. Justifiably, too, because they fabricate tremendous quantities of nuts from Youngstown Scrapless Nut Quality Steel. Not an ordinary steel, each step in making this Youngstown steel, from ore to the finished product, is closely controlled.

That's why, when nut formers punch and pound it, and when threading machines give it another going over, a nut made of Youngstown Steel comes through a winner. This material is free of injurious seams and also machines cleanly in the threading operation.

When you order Youngstown Scrapless Nut Quality Steel, either in Bar, Rod or Wire form, you can be sure it will be held to the right tolerances. Nothing less than perfection is the Youngstown policy.

The payoff for you will come in the form of your finished product.



Five stages of nut making with Youngstown Scrapless Nut Quality Steel Rounds. Made by Russell, Burdsall & Ward, the end result shows what can be done with quality steel. The production machines are running smoothly at the Russell, Burdsall & Ward plants. Nuts by the millions are produced daily. Some are shown in the container in the foreground.

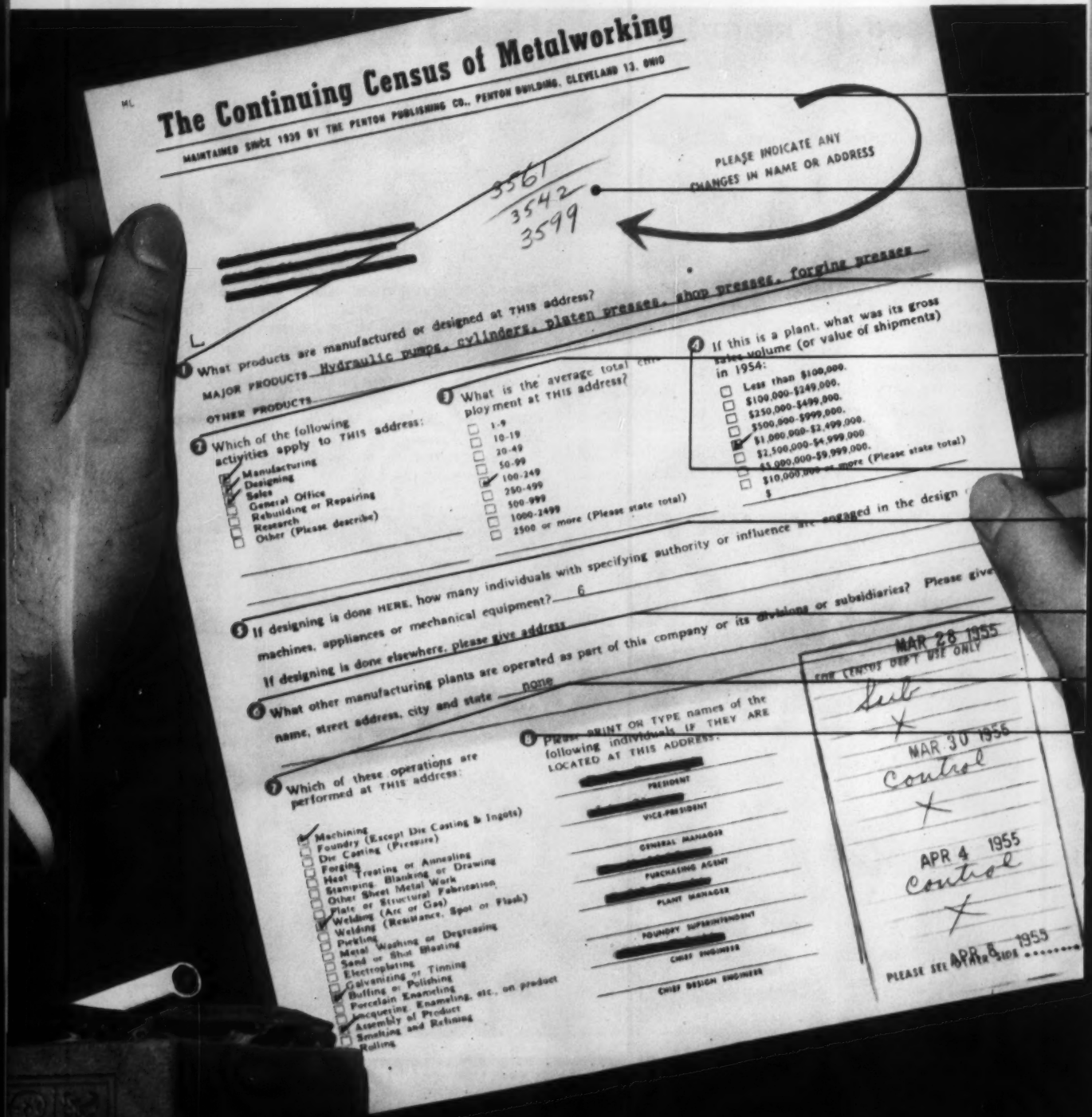
QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

S.I.C. is the start . . .



The Continuing Census of Metalworking

MAINTAINED SINCE 1939 BY THE PENTON PUBLISHING CO., PENTON BUILDING, CLEVELAND 13, OHIO

PLEASE INDICATE ANY CHANGES IN NAME OR ADDRESS

3561
3542
3599

1 What products are manufactured or designed at THIS address?
MAJOR PRODUCTS Hydraulic pumps, cylinders, platen presses, shop presses, forging presses
OTHER PRODUCTS

2 Which of the following activities apply to THIS address:
- ✓ Manufacturing
- ✓ Designing
- ✓ Sales
- General Office
- Rebuilding or Repairing
- Research
- Other (Please describe)

3 What is the average total employment at THIS address?
- 1-9
- 10-19
- 20-49
- 50-99
- ✓ 100-249
- 250-499
- 500-999
- 1000-2499
- 2500 or more (Please state total)

4 If this is a plant, what was its gross sales volume (or value of shipments) in 1954:
- Less than $100,000.
- $100,000-$249,000.
- $250,000-$499,000.
- $500,000-$999,000.
- ✓ $1,000,000-$2,499,000.
- $2,500,000-$4,999,000.
- $5,000,000-$9,999,000.
- $10,000,000 or more (Please state total)
- $

5 If designing is done HERE, how many individuals with specifying authority or influence are engaged in the design machines, appliances or mechanical equipment? 6
If designing is done elsewhere, please give address

6 What other manufacturing plants are operated as part of this company or its divisions or subsidiaries? Please give name, street address, city and state none

7 Which of these operations are performed at THIS address:
- ✓ Machining
- Foundry (Except Die Casting & Ingots)
- Die Casting (Pressure)
- Forging
- Heat Treating or Annealing
- Stamping, Blanking or Drawing
- Other Sheet Metal Work
- Plate or Structural Fabrication
- ✓ Welding (Arc or Gas)
- Welding (Resistance, Spot or Flash)
- Parking
- Metal Washing or Degreasing
- Sand or Shot Blasting
- Electroplating
- Galvanizing or Tinning
- ✓ Buffing or Polishing
- Porcelain Enameling
- Lacquering, Enameling, etc., on product
- ✓ Assembly of Product
- Smelting and Refining
- Rolling

8 Please PRINT OR TYPE names of the following individuals IF THEY ARE LOCATED AT THIS ADDRESS:
- [redacted] PRESIDENT
- [redacted] VICE-PRESIDENT
- [redacted] GENERAL MANAGER
- [redacted] PURCHASING AGENT
- [redacted] PLANT MANAGER
- [redacted] FOUNDRY SUPERINTENDENT
- [redacted] CHIEF ENGINEER
- [redacted] CHIEF DESIGN ENGINEER

FOR PENTON DEPT USE ONLY
MAR 28 1955
Sub
X
MAR 30 1956
Control
X
APR 4 1955
Control
X
APR 5 1955
PLEASE SEE OTHER SIDE .....

of a PENTON publication's Effective Coverage

- Gathering the information for our Continuing Census is much like a survey you might make for *your* company. To determine what kind of plant it is, we first ask, "What do they make?"
- They tell us, and we tag it with its proper Standard Industrial Classification* (S.I.C.) number or numbers. Now, we know in which product categories this plant belongs.
- Next, if there is research or designing activity, it will be of special significance to several of our publications.
- How big is the plant? Employment figures help STEEL, AUTOMATION and NEW EQUIPMENT DIGEST determine whether the plant is sufficiently large to justify coverage, or *how many* copies are required to insure adequate coverage.
- Gross sales volume provides an additional yardstick for measuring the plant's buying power.
- The presence of the designing function, and the number of engineers, gives MACHINE DESIGN a further means of evaluating the engineering activity.
- With the major trend to decentralization, it is important to recheck the Company's *other* plants. (In one case there are 115 separate plant locations.)
- Operations performed provide special interest clues for STEEL, FOUNDRY and AUTOMATION.
- Who's Who? Markets are people *after* you know the plants. This gives us a start on checking the people.

Add it all up and you can see how this Continuing Census benefits you as an advertiser. It is just *one* of the many reasons why PENTON publications help to make good advertising *more* effective.

*All manufacturers use this system in reporting to the U. S. Bureau of the Census.

the PENTON Publishing Company

PENTON BUILDING • CLEVELAND 13, OHIO

ALWAYS FINISHES FIRST

and cuts costs two ways because it's completely automatic!

fast cutting, easy cleaning with

Liquimatic®

the perfect liquid compound for all metal finishing

What are the two big cost factors in your buffing room? Chances are *buff life* figures big when you're talking production costs . . . and the second big factor is *production time* itself. Liquimatic Application Systems are licking these two cost problems in buffing rooms all over the U. S.—because Liquimatic is automatic. An electrically timed system feeds Liquimatic Buffing Compound to the buff in the exact amount to give you the exact cut you need. Because the buff is continually lubricated, buff life is extended up to 400%!

And with Liquimatic there's no compound wasted, no nubbin problem, no hand application, no changing bars —think of the cost savings you can effect in *your* buffing room with these advantages! Savings in buff life alone can soon pay for a complete Liquimatic Application System . . . a system that will continue to save you money — *automatically.*

Check the other features of Liquimatic Buffing Compound . . . then write today for your free copy of Liquimatic's big, new folder that tells the whole cost-saving story of Liquimatic in *your* buffing room.

These additional Liquimatic features mean real savings in terms of time, money, safety—

- longer buff life
- completely automatic
- fast cutting
- easy cleaning
- non-settling
- high flash point
- long storage life
- sprayable viscosity
- adhesive slow-wearing buff face

Liquimatic *. . . gives more buff mileage*

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING COMPANY

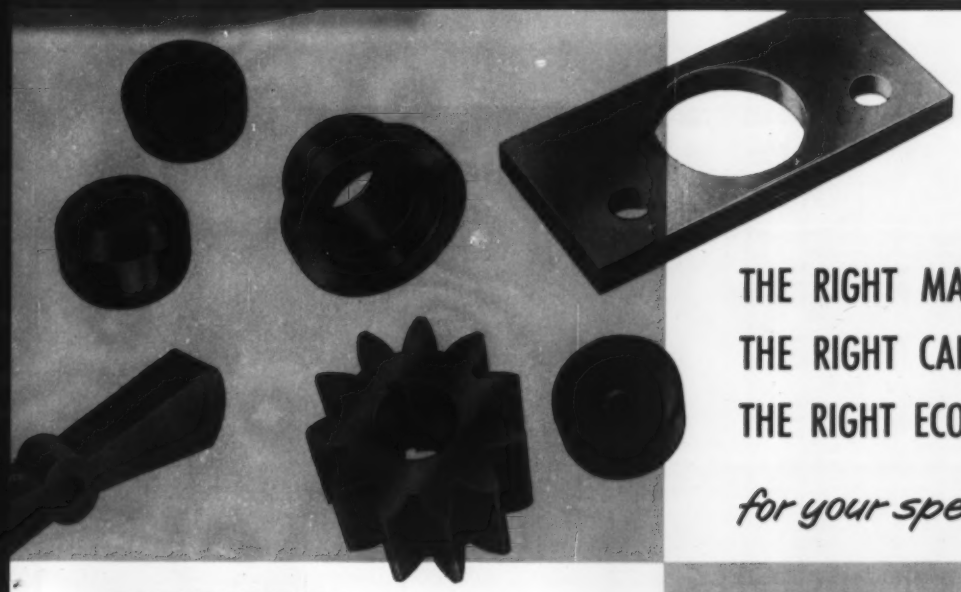
Main Office and Plant, Matawan, New Jersey

J. C. Miller Division, Office and Plant, Grand Rapids, Mich.

SALES OFFICES: Anderson (Ind.) • Baltimore • Beloit (Wisc.) • Boston Bridgeport • Chicago • Cleveland • Dayton • Detroit • Grand Rapids • Los Angeles • Louisville • Matawan • Milwaukee New York • Philadelphia • Pittsburgh • Plainfield • Rochester St. Louis • San Francisco • Springfield (Mass.) • Utica Wallingford (Conn.)

H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES



THE RIGHT MATERIALS
THE RIGHT CAPACITIES
THE RIGHT ECONOMIES

for your specific needs

BRONZE

BRASS

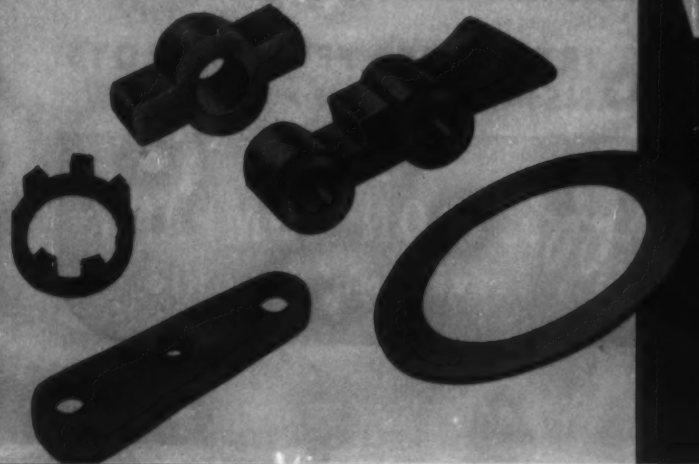
IRON

STAINLESS STEEL

ALLOY STEEL

NICKEL SILVER

and other grades and alloys



IN

POWDERED METAL PARTS

by Keystone

Name your application: heavy-duty structural parts, pieces that must resist corrosion or heat, bearings with built-in lubrication, porous metal filters or many another item—*we'll* produce the right answers for you in material, volume and price. Send us your requirements, for prompt analysis and quotation.

Keystone

CARBON COMPANY

POWDERED METAL DIVISION

ST. MARYS, PA.

Write for this informative Bulletin B-54, detailing composition and properties of popular Keystone powdered metal grades.

Cleveland-Cliffs back in 1911 formalized its program, on which it had been working for many years, by organizing a Safety Department and creating the position of Director of Safety. It was the first to do so. Standards of safety rules and safe practices were formulated and published and placed in the hands of every employee.

LAKE SUPERIOR IRON ORE • FERRO ALLOYS
VESSEL TRANSPORTATION • COAL

THE Cleveland-Cliffs IRON COMPANY

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

WHY GROWL . . .

. . . **OVER YOUR GRINDING WHEEL PROBLEMS?** You'll solve them easily when you switch to CINCINNATI (PD) GRINDING WHEELS. Because *now* CINCINNATI Grinding Wheels offer POSITIVE DUPLICATION—the most talked about development in years. Positive Duplication is a remarkable achievement in precision manufacturing and quality control that can *save you money . . . and increase your production.*

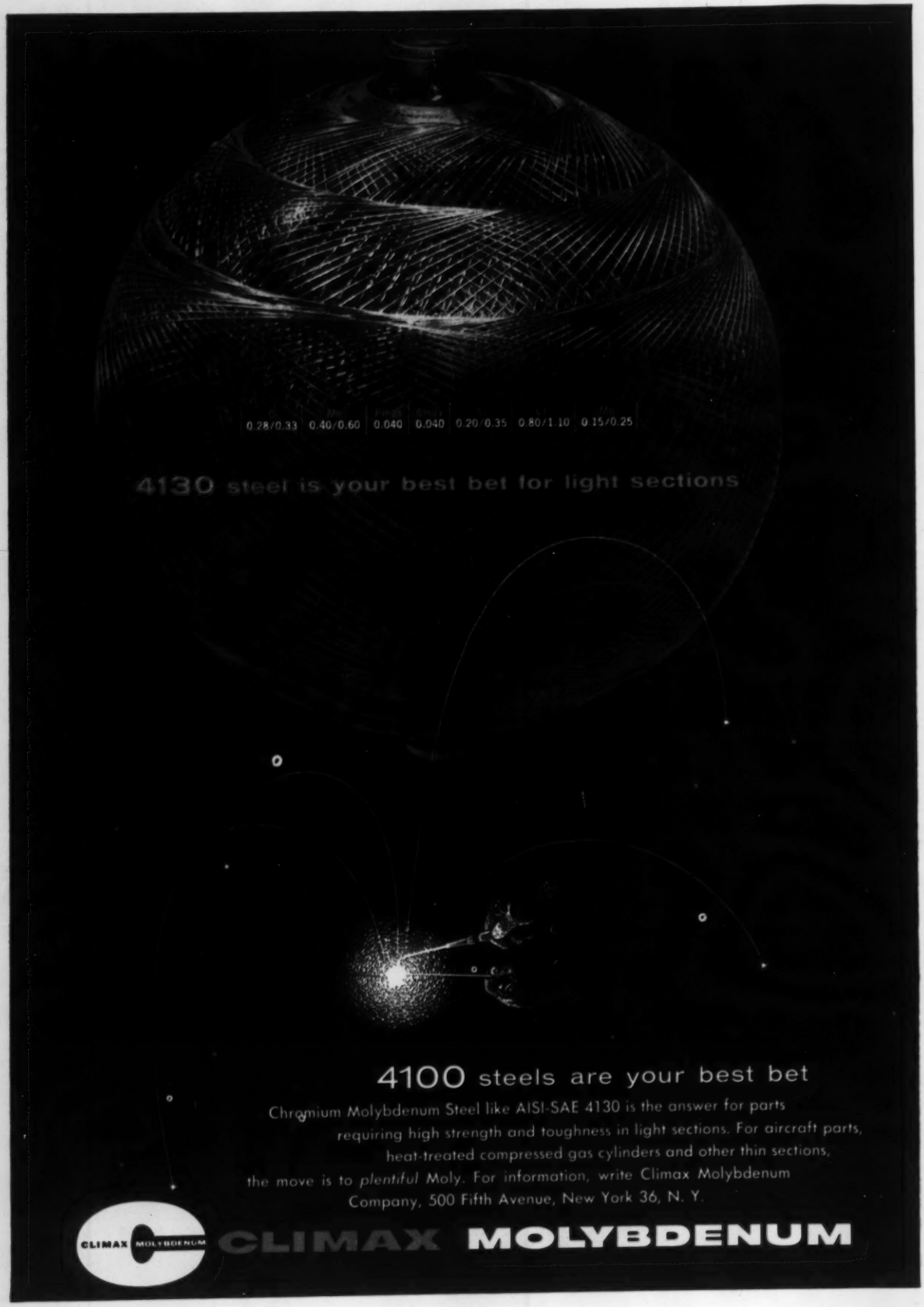
Through the CINCINNATI (PD) Manufacturing Process you are assured Positive Duplication of the original wheel *every* time you reorder. "On grade" with a CINCINNATI (PD) WHEEL means all future (PD) WHEELS will act and grind exactly alike.

Yet CINCINNATI (PD) WHEELS are priced no higher than ordinary wheels.

Let us sink our teeth into your grinding wheel problems, and we'll have you purring like a kitten. Contact us and we'll send one of our representatives—men who know grinding and grinding machines as well as grinding wheels. Write, wire or telephone Sales Manager, Cincinnati Milling Products Division, The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

Remember . . . *only* CINCINNATI Grinding Wheels give you . . . (PD) POSITIVE DUPLICATION.

CINCINNATI
Grinding Wheels
A Production-Proved Product of
THE CINCINNATI MILLING MACHINE CO.


0.28/0.33 0.40/0.60 0.040 0.040 0.20/0.35 0.80/1.10 0.15/0.25
4130 steel is your best bet for light sections
4100 steels are your best bet
Chromium Molybdenum Steel like AISI-SAE 4130 is the answer for parts requiring high strength and toughness in light sections. For aircraft parts, heat-treated compressed gas cylinders and other thin sections, the move is to *plentiful* Moly. For information, write Climax Molybdenum Company, 500 Fifth Avenue, New York 36, N. Y.
CLIMAX MOLYBDENUM
CLIMAX MOLYBDENUM

FACTS ABOUT Exide®

IRONCLAD® INDUSTRIAL TRUCK BATTERIES

THE MORE YOU MOVE, THE MORE YOU SAVE... WITH EXIDES!

EXIDE-POWERED ELECTRIC TRUCKS WORK FULL-SHIFT WITH NO UNSCHEDULED DOWN-TIME. TRUCK OPERATION IS SMOOTH, SPOTTING IS PRECISE - WITH NO NOISE OR FUMES. BUT BEST OF ALL, THE MORE MATERIALS YOU MOVE, THE MORE SHIFTS YOUR TRUCKS WORK, **THE MORE MONEY YOU SAVE** - CONSIDERING EXIDE'S LOWER COSTS TO OPERATE, MAINTAIN AND OWN! YOUR EXIDE ENGINEER HAS A SLIDE CHART BASED ON THOUSANDS OF HOURLY COSTS FOR POWERING INDUSTRIAL TRUCKS. ASK HIM TO PROVE THAT EXIDE-IRONCLADS ARE **YOUR BEST POWER BUY - *AT ANY PRICE!***

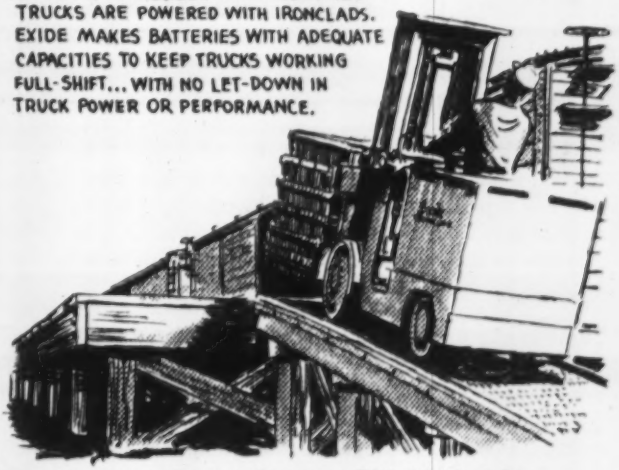
TUBES OF POWER

INSIDE EVERY IRONCLAD ARE SLOTTED TUBES THAT KEEP THE ACTIVE MATERIAL IN FIRM CONTACT WITH CONDUCTING GRIDS OF THE POSITIVE PLATES. THE ELECTROLYTE FLOWS EASILY THROUGH THESE NON-CORRODING SLOTS TO REACH MORE ACTIVE MATERIAL FASTER. RESULT: AN IRONCLAD DELIVERS GREATER POWER... FOR A LONGER TIME... AT LOWEST COST!

- PROTECTED SILVIUM CONDUCTING GRID
- COMPRESSED ACTIVE MATERIAL
- SLOTTED POLYETHYLENE RETAINER TUBE

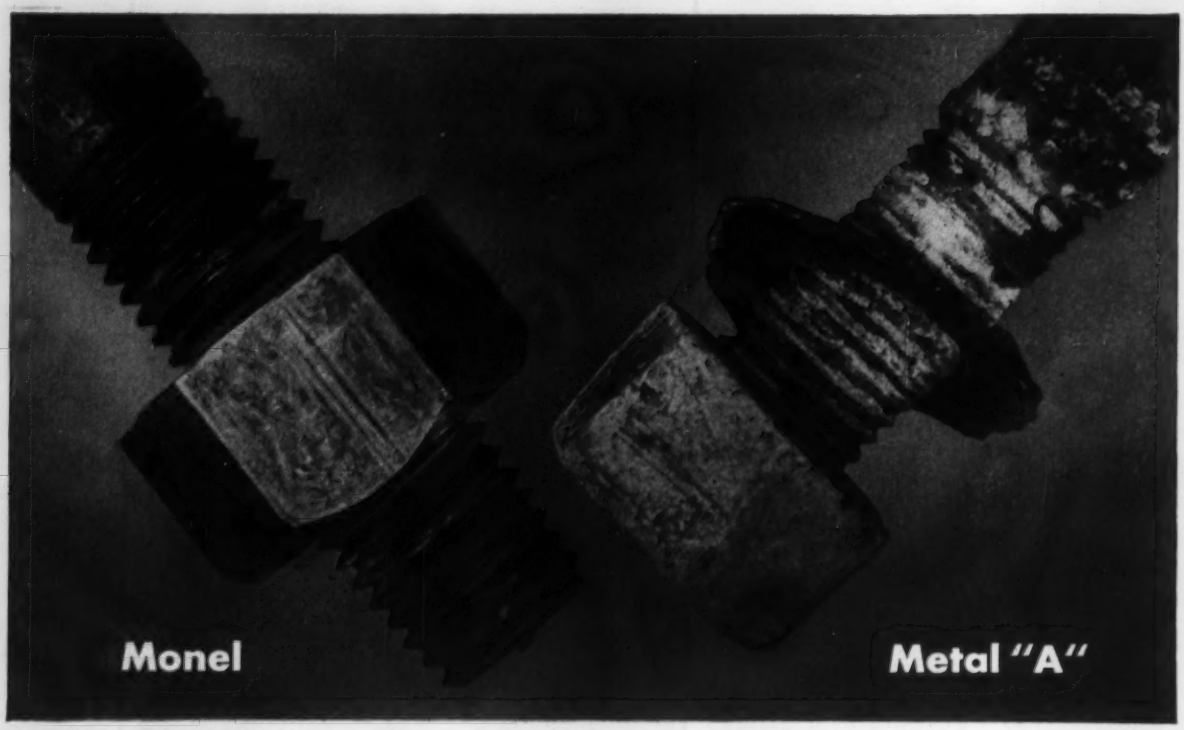
NO MOVING JOB IMPOSSIBLE!

STEEP RAMPS, LONG HAULS, HEAVY LOADS... NO JOB IS IMPOSSIBLE WHEN ELECTRIC TRUCKS ARE POWERED WITH IRONCLADS. EXIDE MAKES BATTERIES WITH ADEQUATE CAPACITIES TO KEEP TRUCKS WORKING FULL-SHIFT... WITH NO LET-DOWN IN TRUCK POWER OR PERFORMANCE.



LET EXIDE HELP SOLVE YOUR INDUSTRIAL TRUCK BATTERY PROBLEMS. ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS. ❷ WRITE FOR FORM 1982, A MANUAL ON INSTALLING AND MAINTAINING MOTIVE POWER BATTERIES.

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.



Compare these "take-up" threads...

You can tighten Monel pickling tank tie rods years longer

Look at the evidence . . . evidence you can duplicate.

The threads tell the story of Monel tie-rods' corrosion resistance. Monel does not dezincify and so the threads in front of the nut are as good as they look . . . all sound metal.

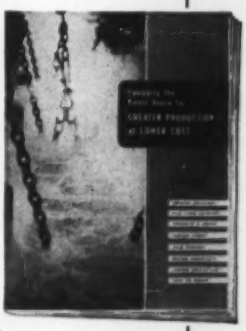
So when you need take-up thread, you have it, with Monel. You have it for many years.

Monel tie rods, users say, ordinarily outlast both the original wood tank and at least one replacement. One steel mill superintendent, for example, reports, "Monel tie rods gave us 19 years service on two old tanks . . . 22 years on two others." (The acid is 6-10% sulfuric at 180°F.)

Tight tanks save acid – Many users state that acid saving alone repays the first cost of Monel tie rods. They tell of other things they like, too . . . *Monel strength*, under tensions applied in tightening and by swelling timbers, *Monel toughness*, these rods take the wear and tear of pickling service in their stride.

New booklet packed with equipment suggestions

See and read about many recent developments in Monel equipment for the pickle house. A spanking new 32-page Inco booklet, "Equipping the Pickle House for Greater Production at Lower Cost" gives illustrations and performance information. Tells how *you* can take advantage of Monel in designing your equipment. Write today.



THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

INCO TRADE MARK **Monel**... for pickling equipment

STEEL
October 17, 1955

Metalworking Outlook

Trial Balloon on Steel Prices?

Within the last ten days at least three prominent steel executives have commented on the need for higher steel prices. U.S. Steel Corp.'s Benjamin F. Fairless, National Steel Corp.'s Ernest T. Weir and Youngstown Sheet & Tube Co.'s J. L. Mauthe have pointed out that the high cost of expansion (at least $300 per ingot ton for all-new facilities) requires higher steel prices, more liberal government tax depreciation policies and/or more investor support.

Black Market in Nickel

A black market in nickel is becoming more troublesome. The Commerce department has caught two firms which got nickel salts and anodes under U.S. priority ratings, then used the material for nondefense products or resold it. As a result, Commerce is tightening up on nickel priorities. Consumers will have to justify use of preference ratings by identifying related military contracts.

Report on Business

Here's the September business report of the Chicago purchasing agents: Deliveries are still slow. The upward price spiral has moderated. Inventories are less stable. Employment, production and order backlogs are up. More and more companies find they must order their chief materials at least 60 days in advance to have them when needed. Profits show an encouraging increase.

Struggle for Freight Cars

A freight car shortage will bother industry for the next several weeks. Its causes: More carloadings (15 per cent higher than a year ago) and declining car ownership (about 1,700,000 owned now, compared with 1,735,000 last Jan. 1). There's hope for relief on the car ownership phase, but it won't come for months. Railroads are highballing new orders to carbuilders. The order backlog stood at only 13,013 on Sept. 1, 1954. It had jumped to 52,803 on the same date last month. Because of farm crop movements, this is the peak rail traffic season. The pressure should be off by mid-November.

Toward More Private Ownership

The Air Force wants to own less industrial real estate and equipment. It reasons: Since AF material deliveries will remain stable at about $6 or $7 billion per year for the next several years, contractors can afford to have more of their own facilities. From now on the Air Force will give preference in awarding contracts to the companies that have their own facilities. Of the $7.4 billion the service will spend on materials in fiscal 1956, $2.93 billion will go for airframes and missiles, $1.61 billion for power

Technical Outlook—p. 113 Market Outlook—p. 157

plants, $1.07 billion for armament and electronics and $1.82 billion for ground handling and training equipment, fuels and miscellaneous items.

Misleading Figures?

The Senate Military Preparedness Subcommittee claims that the Defense department issued "misleading" figures in a list of the 100 largest defense contractors which omitted General Motors and 44 other firms. Sen. Lyndon Johnson (Dem., Tex.), group chairman, says the revised Pentagon figures omit a key six-month period in which GM, Boeing and General Dynamics received big contracts. He charges: By failing to cumulate the figures from 1950, the list fails to show that GM still tops defense contractors. Defense department spokesmen deny any intention to deceive Congress. They say the list was prepared and conforms to the specifications originally made by Senate Banking Committee Chairman J. William Fulbright (Dem., Ark.).

Uranium Milling Capacity Soars

Uranium milling capacity is at last catching up with mining facilities. Milling production this year should double last year's. It should double again next year, with 11 plants in operation. Says R. S. Aries & Associates, chemical consulting firm: "Efficient chemical engineering is making the new mills far more economical than the old converted vanadium plants. At a cost of about $10,000 per ton of daily capacity, milling is far more expensive than mining to go into."

Ogden Acquires Scrap Firm

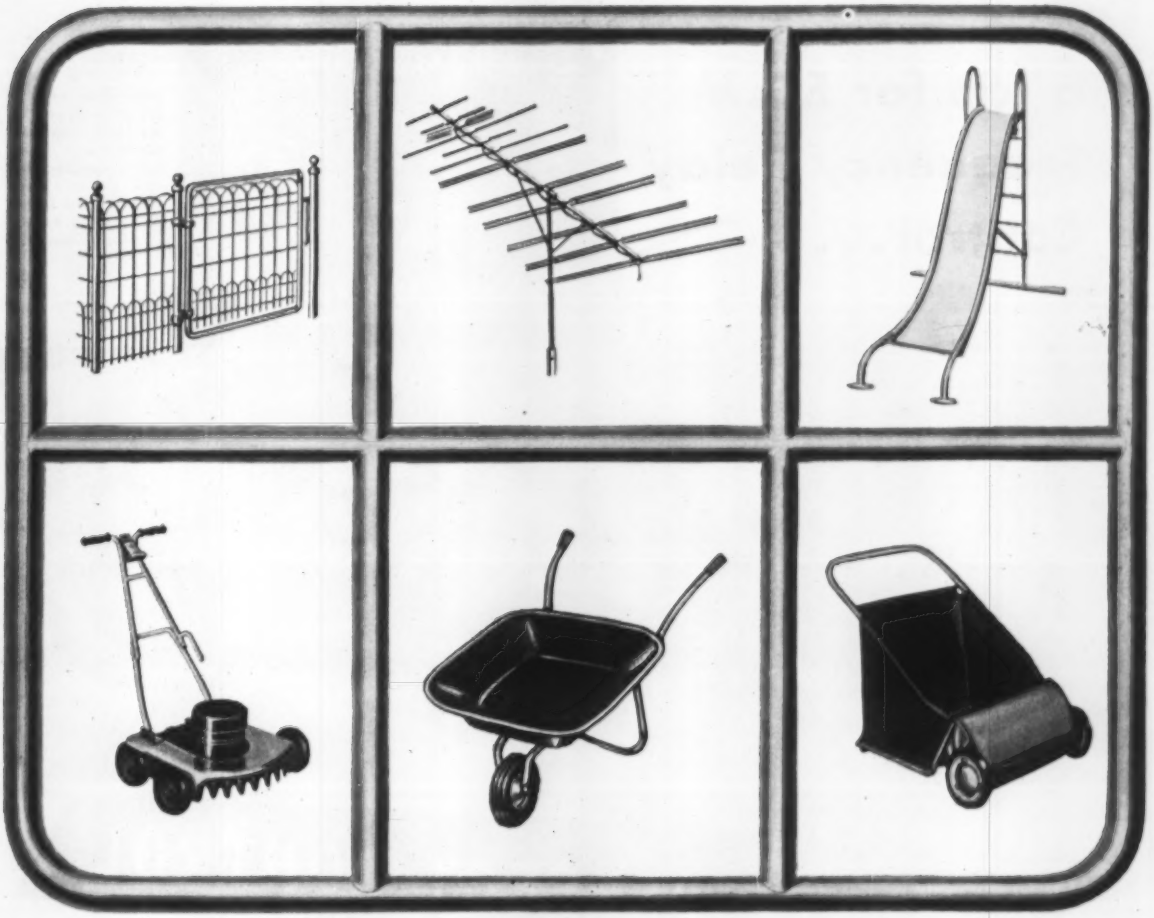
In a deal involving about $20 million, Luria Brothers & Co., major iron and steel scrap firm, was taken over last week by Ogden Corp. Since 1953, Ogden has acquired four other companies in diverse metalworking fields. It was formerly an investment house. Luria policies and business remain unchanged.

Eight Times Safer

How safe is industry? "Our workmen," says President Charles M. White of Republic Steel Corp., "are eight times safer at their jobs than they were 25 years ago. And the accidents that happen are only one-fifth as serious, on the average."

Straws in the Wind

Iron and steel payrolls in August hit $320.7 million, a new high . . . In the four months since GM agreed to a full union shop, United Auto Workers has brought 600,000 more members under such contracts, with a big gain in dues . . . Labor observers deplored the necessity to declare martial law in New Castle, Ind., last week as a result of strike violence at Perfect Circle Corp.'s foundry there; whatever the outcome, they believe, the whole affair is a blow to the trend toward more peaceful labor-management relations.



Special Zinc-Coated ARMCO TUBING

May Improve Your Products, Too

A new kind of material is now going into the products you see here.

It is Armco ZINCGRIP Tubing. Besides being modern looking, it gives these products the unbroken rust protection of a hot-dip zinc coating, along with the strength of welded tubing.

This welded tubing is made of Armco ZINCGRIP, a special steel coated on both sides with zinc by a patented process. Even the welding flash is planed away on the outside, and a new zinc coating applied to form an almost invisible seam.

What's more, the special coating stays on when Armco ZINCGRIP Tubing is bent or twisted into shape by the manufacturer. There are no zinc-bare spots where rust can get a quick start.

Armco ZINCGRIP Tubing is made in outside diameters of ⅜-inch through 3 inches, with wall thicknesses of 20 gage through 12 gage. For information and prices, just fill out the coupon and mail it to us.

Armco Steel Corporation, 1615 Curtis St., Middletown, Ohio
We manufacture_____
Send me information on Armco ZINCGRIP Tubing ☐
Quote me on:
_____ feet_____ gage_____ diameter _____length

NAME:_____

FIRM:_____

STREET:_____

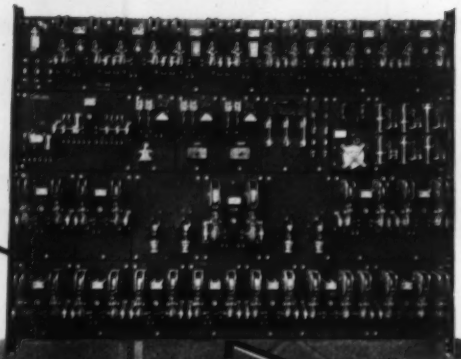
CITY:_____ ZONE:_____ STATE:_____

ARMCO STEEL CORPORATION 1615 CURTIS ST., MIDDLETOWN, OHIO

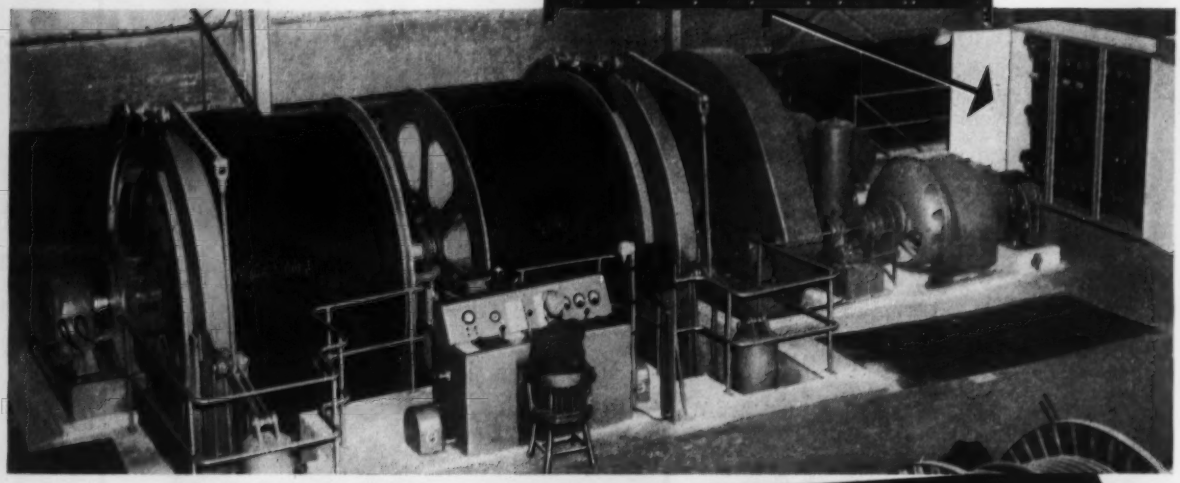
SPECIAL STEELS

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

a job for EC&M Frequency Relay Control . . .



Installation in northern New Jersey of Nordberg balanced double cage slope hoist operated by two wound - rotor motors under EC&M Frequency Relay Magnetic Control.



Cage Creeps Up Or Down—Runs at Full Speed — Is Slowed Down From Operator's Master Switch.

PERFECT CONTROL

The passengers enjoy a velvet-smooth ride on this mine-hoist. EC&M Frequency Relay Control permits adjusting the torque of the two 200 hp, 440-volt wound rotor induction motors to cause the cage to creep, to run at full speed, or to operate at intermediate reduced speeds.

The operator's multi-speed-point EC&M Cam Master Switch makes speed selection quick and sure.

EC&M Frequency Relays automatically switch motor connections to maintain safe operation under all conditions.

Because of the highly efficient operation throughout the past five years of a similar hoist equipped with EC&M Frequency Relay Control, the user specified EC&M Control for this latest hoist installation. If you have a hoist problem, it will pay you to look into EC&M Control.

SMOOTH RIDE FOR MEN OR MATERIALS

1. Cage creeps to stop with passengers.
2. Cushioned acceleration during hoisting and lowering.
3. Slowdown by motors—EC&M Type WB Brakes set and hold the load.
4. Slow speed for rope inspection—about 12% of normal hoisting speed.

No. 28 ACCELERATOR Bulletin describes this EC&M hoist control system. Write for your copy.

THE ELECTRIC CONTROLLER & MFG. CO.

4498 LEE ROAD ★ CLEVELAND 28, OHIO

Clear Thinking

The conflicting reports, rumors and speculation in the three weeks following President Eisenhower's illness have profoundly influenced the nation's thinking and planning.

Entirely credible is the report that the President will not run again in 1956. Of course, there is uncertainty over who will be in the White House in 1957.

But then there's the rumor that Brother Milton Eisenhower will emerge as the Republican candidate from a field including Vice President Nixon, Senator Knowland, former Governor Dewey and Chief Justice Warren.

There's speculation that Democrats can pick Stevenson, Harriman, Kefauver, Russell or Rayburn and win. Swept aside will be the business-minded leaders in government. Ascending back into power will be the New Dealers.

To help muddle the situation are the current restraints on credit which are designed to slow down inflation—and thereby sales of houses, autos and consumer durables.

On the international scene, the communists are making new encroachments in the Far East and Middle East. The French and Germans may tangle over the Saar question. The not-so-cold war is a little colder again.

Certainly, there is cause for concern, but perspective is needed, as these facts witness:

Gross national product in the U. S. is at a new peak of $390 billion, may reach $400 billion in 1956. Steel production last week reached a new high; unemployment dropped to a new low. Personal spending is likely to get a new shot in the arm through income tax cuts. Defense spending will be heavy.

The basic foundation for continued long-term growth and prosperity remains unaltered: A growing population that insists on increased earnings to buy more things to enjoy in added leisure time. To keep ahead, technology is advancing at a breathless pace.

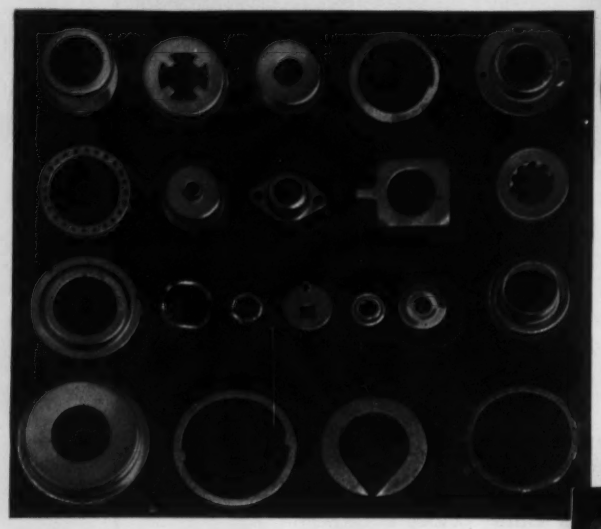
No matter which party wins the 1956 elections, the U. S. will have a stable government. Between now and then we must not lose sight of our long-range goals. What we need today is more clear thinking.

Irwin H. Such

EDITOR

LEADERSHIP *Backed by*
68 Years of Continuous Service to American Industry

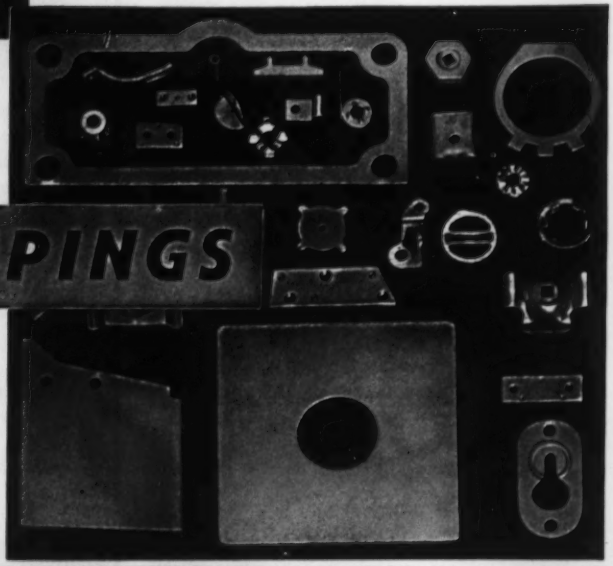
MILWAUKEE WROT WASHERS



SINCE 1887

In terms of "satisfaction to the customer" the dominant leadership of Wrought Washer Mfg. Company in this specialized field represents not only a thoroughly dependable source of supply to meet all your requirements for Standard and Special Washers, but of equal importance, it carries with it a wealth of technical know-how dealing with a wide variety of production and design problems . . . available to you as a gratis service. More than 25,000 sets of dies "in stock" at our plant offer the greatest range of selectivity.

Our equipment for handling contract production of stampings includes presses for blanking, forming, drawing, shearing and extruding. In many cases it is possible to produce stampings at a lower cost than they can be produced in your own plant, with our own equipment. Our own tool and die-making shop enables us to make up the necessary tools to fit your specifications.



STAMPINGS

We are equipped to furnish stampings in any desired materials and finishes, ranging in size from small parts to large heavy-gauge pieces. Our engineering staff will be glad to co-operate with you in every way consistent with economical and efficient production.

• • •

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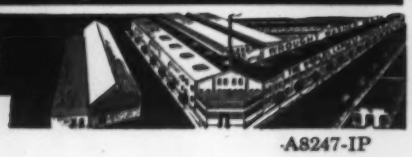


A8247-IP

Check Your Human Relations I.Q.

1. Are we doing an effective screening job to fully utilize the capabilities of the individual?
2. Do our salary structure and fringe benefits compare favorably with companies in our industry and geographic location?
3. Does each individual understand our job classifications, his salary range and potential?
4. Do we use training programs and job rotation to best advantage?
5. Are we taking full advantage of prestige-building practices?
6. Do we have the best possible communications and contact between top and middle management?
7. Do we encourage outside social and civic activities to help the individual build better community ties?
8. Is top management's general attitude one of genuine interest in middle management members as individuals?

Middle Management: How To Hold It

"WHEN YOU invest $7000 a year training a new graduate engineer and still run a 50-50 risk of not keeping him five years, turnover becomes a real problem—and expensive."

That's the way a metalworking personnel executive sums up the acute situation in engineering. "But," he adds quickly, "don't overlook the turnover in the other white-collar, middle-management ranks—it's increasing too."

Focus—Today's high-level business activity and expansion are accelerating the problem. Most companies report a turnover rate of between 10 and 15 per cent in middle-management; but it's the markedly higher rate in the engineer and young employee group that's focusing management's attention on remedies.

Salary, while often a key factor in bidding for a college graduate, is not the chief motive in job jumping, most personnel execs feel. Most frequent factors mentioned: The poor attitude of top management toward the middle ranks, poor placement of the individual and the use of his talents, a lack of prestige building practices and basic differences between the philosophies of the technical and business management employee.

Training—Turnover is highest in the first five years—particularly in the engineering and technical group where demand outstrips supply. The 50-50 figure, while high, is not the exception, and it's a major reason for new emphasis on training programs. Hotpoint Co., Chicago, for example, plans to increase the number of young men in its development program from 50 to 125.

Training programs vary in scope and length; two years is about average. Not only do these programs help orient the employee with the company and field in which he will work, but they get him through the first two or three years when turnover is highest.

Appraisal—Industry is increasing the practice of periodic reviews with the individual to discuss his progress and future with the company. Important here: Effective job classification with salary ranges. Most personnel men feel that the individual should know the upper and lower limits to create incentive. Some feel that the upper limit should not be known, so the individual can't get the feeling he's "bumping the ceiling and it's time to shop around."

The review—it should be held at least once a year—assures the individual that he's not a forgotten cog; it assures him of fair treatment regarding salary boosts and promotions; and it gives management an effective tool for evaluation.

Waning? — Pension programs, bonus incentives, health and insurance programs and other fringe benefits are factors. But many personnel men think that as more and more companies develop programs—particularly pension plans—in line with the leaders, their influence on turnover will decrease.

There's little unanimity on the use of prestige building practices. Parking and cafeteria or restaurant privileges are becoming more popular. Newer, more modern buildings are putting more emphasis on office personnel layouts. A common gripe of many lower echelon engineers in large companies is the "bull-pen atmosphere" in which they must work. "Plush, private offices aren't necessary," comments a Chicago personnel director, "but it's amazing what a few wall partitions to make three and

four-man offices will do for morale."

Recognition—More contact with the cream of middle management is high on the list of wise things to do. Thompson Products Inc., Cleveland, has a conference program which brings "comers" and top management together. Carefully screened employees meet regularly with top executives at a dinner meeting. Bull sessions are encouraged. It gives management a chance to look over the young men. The young men, in turn, develop valuable enthusiasm because of the recognition.

Extracurricular activities, in and out of the company and the employee's field, are important, most personnel men feel. More and more companies are promoting and encouraging employee participation.

Extracurricular—Off-hour training courses given within a company or paid for by the company at neighboring universities keep the employee interested in developing his knowledge and value to the company. Encourage membership in professional societies and attendance at conventions and meetings to show the employee you want him to keep pace with his field. Sending the employee to meetings like those of the American Management Association will help develop his talents and make him a "better company man."

Arthur C. Studt, Hotpoint manager of education and training, believes that helping an employee build strong community ties is a big factor in reducing turnover. Hotpoint encourages participation in social and civic activities. It annually lends a man to the Chicago Community Fund for three months. He works for the fund director, generally making solicitation calls.

Other activities Mr. Studt recommends: Chamber of Commerce, service clubs, executive clubs. Through these activities, the employee gets into contact with his counterpart in other companies and industries. In exchanging ideas he gains good will for himself and his company. He develops community as well as company ties—factors to consider when thinking about changing jobs.

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.

Foremen Need More Power

Survey shows most firms expect line supervisors to handle more problems with less authority

MANY COMPANIES expect their foremen to do the impossible: They are not given the authority to get the results expected of them.

A recent survey of 66 companies by the American Management Association's Supervisory Development Service bears out that situation.

Firms Reply—More than four-fifths of the surveyed firms expect foremen to discipline employees, but less than half permit them to demote or discharge for cause.

Almost all the companies expected the foreman to help workers who have personal problems. Yet about all he can do in most firms is allow time off. Half the companies give the foreman the right to adjust vacation periods; even fewer will let him transfer his men within a department or grant leaves of absence.

Work Planning—Although cited as a key supervisory responsibility, planning usually is on a higher level, most firms admitted. Cost cutting and waste stoppage are problems of foremen, but less than a seventh of the answering firms asked them to keep records of their savings.

In 90 per cent of the companies surveyed, foremen are responsible for the enforcement of safety measures, but only in about three-fourths do they have that authority. About a fifth of the firms let foremen help in safety program planning.

Exception—Employee grievances are the chief exception to the rule of responsibility without authority. About three-fourths of the companies expect foremen to hear grievances and settle them.

More Coal Needed

Anticipated demand by 1975 is 1 billion tons. Industry says taxes hinder expansion

NEW INVESTMENT of $2.8 billion is needed by the bituminous coal industry to meet demands expected in the next 20 years. Problem: It will take nearly 100 years to save this amount from the industry's net profit (based on the latest government statistics).

Suggestion—The National Coal Association, Washington, says the federal tax laws should be revised to permit a bigger depletion allowance (now 10 per cent of the gross income). The association points out that far greater allowances go to the oil and gas industries.

Social Security legislation with its direct payroll taxes has hit the coal industry hard; it has a high ratio between labor costs and income. Between 60 and 65 per cent of the price of coal at the mine represents labor costs.

Present and Future — About 1 ton of coal is used for each ton of steel made. Over 50 per cent of all electrical power is generated from coal. The Paley Commission predicted in 1952, that a huge increase in coal production will be needed: 1. To meet rapidly growing power needs. 2. To form the basis of a synthetic oil and gas industry as reserves of natural gas and oil vanish.

At the 1954 rate of use, coal reserves will last 2400 years; oil reserves, 13.1 years; natural gas, 22.5 years.

Present capacity of the coal industry is slightly more than half the 1 billion tons government economists expect will be needed. But investment capital hesitates because of low profit rates (in 1952, 7 cents for each ton mined) and low use of capacity. Only 392 million tons were mined last year, although this year may see 450 million tons taken out of the ground.

Expanding sales put mechanical packing industries in big business as . . .

Gasket Manufacturers Seek New Materials

GASKETS, packing and seals are getting to be a bigger business every day.

Eight years ago Neff-Perkins Co., Cleveland, started a maintenance distributorship with three people. It branched into manufacturing nonmetallic gaskets. Today, it employs 98 and has recently opened another plant in Painesville, O. Its annual sales volume jumped from $100,000 in 1946 to over $1 million this year.

While Neff-Perkins' rapid growth may not be typical of the whole industry, its sales do typify the over-all expansion of the mechanical packing and sealing business.

Available Figures—Best guide to industry activity is an index compiled by the Mechanical Packing Association, New York, from quarterly sales as reported by a representative group of manufacturers. Although this by no means covers the several hundred companies in the field, it does give an accurate estimate of the 25 firms which handle most of the production.

Association figures show a 50 per cent increase since 1945. Sales in the first half of this year ran about 10 per cent better than 1953's. Manufacturers say 1956 will be even better.

Examples—Partial figures show shipments of leather packings, oil and grease retainers and washers rose from $20 million in 1947 to $61.3 million in 1953. Asbestos gasket sales in 1947 totaled $76.9 million. By 1953, sales had reached $115.2 million. No later statistics are available on these products or synthetic rubber, plastic or metal seals—which are becoming increasingly important.

Practically all industries use mechanical packings, but power plants, petroleum, chemical, automotive, metalworking and machinery fields are the big consumers. Most packings, gaskets and seals are sold to original equipment manufacturers.

Materials — Fluorocarbon plastics and silicone rubber are coming into use as sealing and packing materials. Mechanical seals are more in demand because they are practically leakless and cause no wear on rotating shafts.

Problems—Most companies say their troubles are technical: Meeting the exacting requirements which stem from high temperatures and pressures created by atomic energy units and jet engines.

John T. Urwin of Neff-Perkins, reports: "The big problem today is educating our engineers to make them aware of the dozens of new materials being used in the business. We want to find the right material which will do the best job of sealing."

Tool and Die Sales Climbing

IT COULD be better, but, all in all, it will be a good year. That's how tool and die manufacturers view 1955. They're looking for improvement in 1956.

Since trends in the tool and die business generally precede the same kind of movement in other branches of metalworking, another banner year is shaping up for the nation's biggest industry.

Sparkplugs — Supplying impetus to the tool and die pickup are autos, appliances and utilities. The growing atomic industry and new developments in ordnance and missiles offer increasing promise, says John Barth, general manager, Barth Corp., Cleveland.

The contract tool and die industry had its best year in 1953. Defense cutbacks followed, but even so, 1954 was a pretty good year—due mainly to a big first half.

Comeback—A pickup got rolling in March of this year and continues to broaden out. That's why tool and die men think this year will end up close to 1954 volume. Last fall, business was going down; this fall, it's going up.

But the situation varies greatly from area to area, firm to firm. In Cleveland, for example, business for some turned up in March, along with the national trend. Others just felt the upturn in the last two or three months. Most feel like William Warrander, secretary-treasurer, Tools & Gages Inc., who says: "I look for the pickup to continue through the first of the year and beyond."

Building Up—In Detroit the revival is just starting. And area firms are planning on a big one. Automakers are reserving time in the shops, though most contract-letting is still to come. The feeling is that the auto industry has big changes planned for '57. Tooling volume is expected to be heavy. A good sign: Employment, down most of this year, is building up.

Prices are a sore spot. Says one producer: "Prices are still heavily competitive, and we haven't passed along increases. The last year has been one of the worst in the last ten in price cutting. Prices and profits have suffered."

To Come—Indications are for prices to go up soon. "Having absorbed several prior cost increases, it is likely that the industry will pass on the latest cost increases by raising prices about 5 per cent," one executive believes.

Some firms already have taken the step. "Labor and material cost increases two months ago raised our costs about 5 per cent. We have raised our prices accordingly and hope to get the work," says a company president.

Backlogs—Putting the industry in a better position to get its prices more in line with increased costs is a small build-up in backlogs that shows signs of continuing. Helping out: Customers show a tendency to subcontract more of their tooling, says Jerome H. Stanek, vice president, Stanek Tool & Mfg. Co., Milwaukee.

Customer deliveries are good. "We can start on small jobs in one week and large jobs in three weeks," says H. Harig, president, Harig Mfg. Corp., Chicago.

Tradition — Across the nation most plants are working more than 40 hours a week even though business may be down. George S. Eaton, executive secretary of the National Tool & Die Manufacturers Association, puts it this way: "1. To get business, shops promise quick delivery; then they have to work overtime to make their schedule. 2. The men are used to working overtime and like the way it builds up their paychecks."

Keeping those men happy is important. Expert tool and diemakers are scarce in most areas, and competition for them is almost as keen as it is for orders. Apprentice programs are growing slowly, but most employers agree that not enough are being trained.

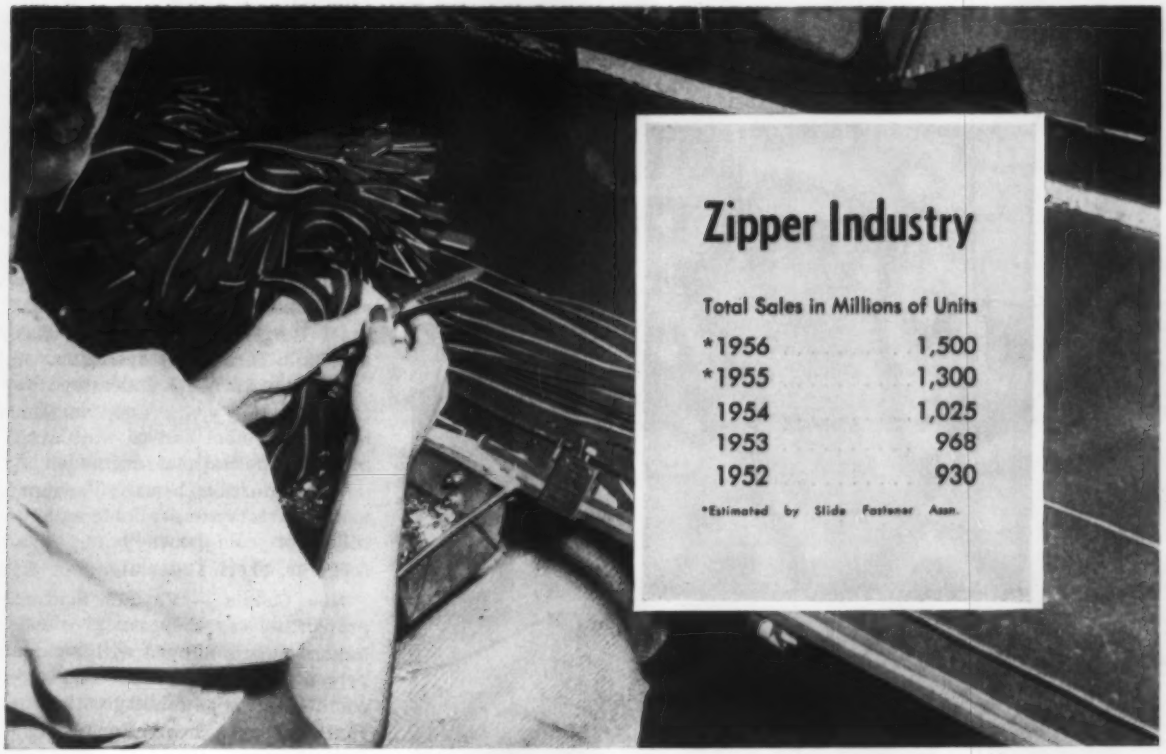
Contract Tool and Die Industry

(billings in millions of dollars)*

1956	$725
1955	690
1954	700
1953	750

*Estimated

NTDMA



Zipper Industry

Total Sales in Millions of Units

*1956	1,500
*1955	1,300
1954	1,025
1953	968
1952	930

*Estimated by Slide Fastener Assn.

Zippers are inspected frequently to avoid costly replacements

Slide Fasteners Hit Slow Sales Rise

ZIPPER SALES slid up this year, but it was a tough pull.

Manufacturers of slide fasteners estimate their unit sales volume for 1955 will be about 1.3 billion units ($130 million). In 1954, 1.025 billion zippers were made. Estimates for next year run around 1.5 billion.

Price Fight—Although volume did increase this year, there has been some price cutting brought on by stiff competition.

Some 15 or 20 companies do a complete job of manufacturing and marketing zippers, but there are probably 200 firms which assemble and market components.

Comment — Dwight M. Allgood, executive director, Slide Fastener Association, says: "Price fighting is a small facet in the maturing process of the industry. Too many untested innovations by 'duffers' in the fastener field have cut profit margins temporarily."

Mr. Allgood adds: "The industry probably will be producing at least 2 billion zippers by 1965."

Quality Control—"The big problem in the industry," says Harry Waldes, executive vice president, Waldes Kohinoor Inc., New York, "is maintaining a uniform level of control and precision engineering (tolerances of 0.0001-in.). Combining metal with textiles greatly complicates the problem."

How They Are Made—Zippers work something like a ball-and-socket joint. Cord is sewed to cotton tape at the rate of 3000 stitches per minute, 12 stitches per inch. Simultaneously, wire stock is fed into a "chain" machine which cuts and forms it into "scoops" and "crowns." A chain of "scoops" is clinched on one cord. "Crowns" are clinched to the other.

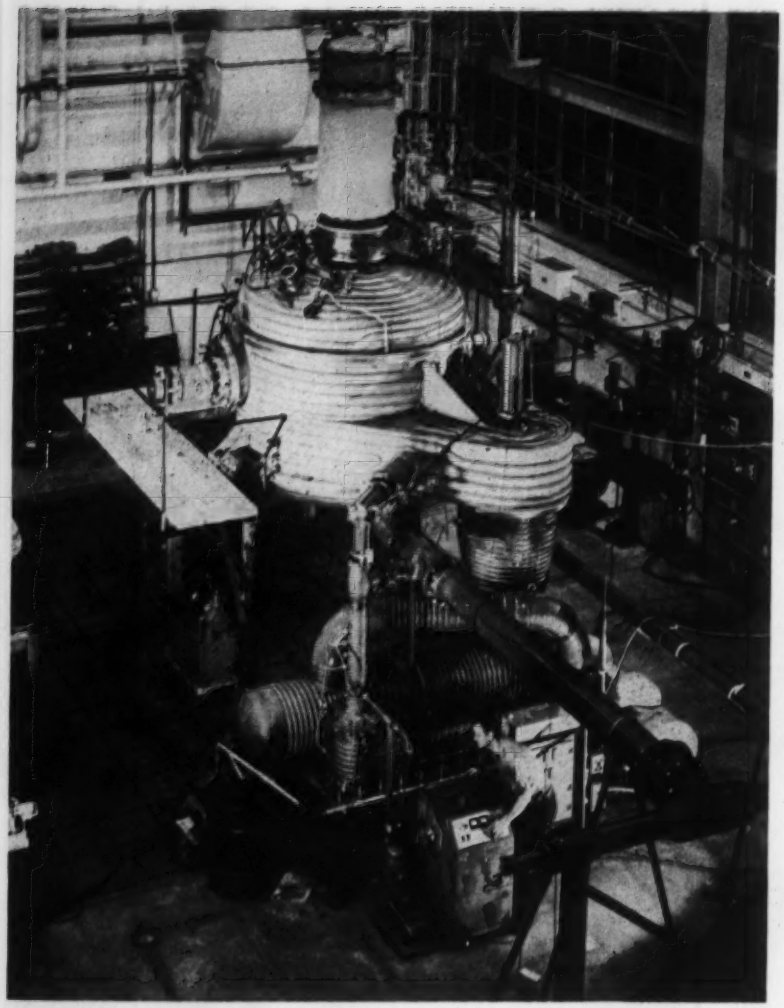
Zipper Nipper—A slider, formed from flat stock, rides along the "scoops." Its diamond-shaped lug holds the "scoops" at a 60-degree angle so the "crowns" will easily lock or unlock into them.

Most fasteners are stamped or formed, but one company diecasts its zippers. Finishes usually are baked on although anodizing and other special finishes are used.

Metals and Plastics — Before 1939, almost all zippers were made of brass. During and since World War II, aluminum has been widely used. Nickel and zinc are other fastener metals. Steel is still being experimented with.

Plastic zippers are no longer popular, but some companies are turning out a nylon fastener which works on a channeled, friction-groove principle.

Markets—Although more than half the zippers made are for the clothing trade, they have other common uses: Vehicle covers, instrument cases, luggage, military equipment, etc. A portable canvas grain bin developed by the Agriculture department is assembled with zippers.



Consolidated Vacuum tests Carboloy's new furnace as . . .

Vacuum Melting Leaves Lab

USES of vacuum-melted steel are climbing. As producers begin to count output in tons rather than pounds, they are meeting accelerating demand from jet aircraft makers and many other industries.

Why melt steel in a vacuum? Consolidated Vacuum Corp., Rochester, N. Y., answers: "The purpose is to provide an environment free of damaging gases; gases liberated during processing of the metal are removed quickly and continuously." The metallurgist introduces his charge to the crucible, melts it and pours ingots without breaking vacuum.

Taking Notice — Vanadium-Alloys Steel Co., Latrobe, Pa., says: "Sales of vacuum-melted metals have shown a constant increase, making necessary the installation of additional equipment." Its association with the Carboloy Department of General Electric Co., manufacturer of vacuum-melted steels, is typical of the growing interest as steelmakers watch the process come out of the laboratory.

Vacuum melting took a major step in December, 1954, when Utica Drop Forge & Tool Corp. installed two 1000-lb furnaces at its New York Mills, N. Y. plant. In May of this year Carboloy installed a 1000-lb furnace at Detroit. Reports Consolidated Vacuum: "This is the first commercial type, semi-continuous, high-vacuum melting and casting furnace installation."

Early Birds—In 1954, Crucible Steel Co. of America, Pittsburgh, joined with National Research Corp., Cambridge, Mass., to form Vacuum Metals Corp. Another steelmaker, Universal - Cyclops Steel Corp., Bridgeville, Pa., has a 1000-lb furnace in operation.

While researchers understood its principles 50 years ago, vacuum melting of steel had to wait until modern applications demanded it on a production basis. Vacuum-melted metals are available as hot-rolled or cold-drawn bars, wire, forgings, sheet and plate.

New Metals — Vacuum melting proponents say they can give customers metals alloyed with sizable percentages of titanium and zirconium—an impossibility with conventional open hearth or electric furnace practice.

W. B. Pierce, vice president and technical director, Allegheny Ludlum Steel Corp., Pittsburgh, comments: "There's concrete evidence that vacuum melting improves the high-temperature properties and the cleanliness of most alloys."

Aid to Designers — Carboloy sums up advantages of its Consolidated Vacuum furnace: "Our new pilot production unit will give designers more leeway in selecting better materials for advanced development work. It will make possible the creation of entirely new alloys from lower-cost, less-critical elements of equal or better structural properties than those produced by air melting."

Researchers at Utica Drop Forge add: "Certain characteristics, like fatigue strength of bearing steels, have been improved by vacuum melting. The stress rupture life of turbine blades made by vacuum melting is at least twice as good as that of conventional types." A user of vacuum - processed, high - chromium stainless steel alloy finds impact strength is increased 50 to 1 over the air-melted alloy.

Here—The most immediate need for these improved properties is in

aircraft. A supplier of bearings for high-temperature aircraft applications took advantage of them and cut its rejection rate from 20 to 2 per cent.

Uses are constantly expanding, point out Vanadium-Alloys officials. Many parts requiring high strength at elevated temperatures can be made to advantage from vacuum-melted metal.

Examples are precision bearings, special rolls and other parts requiring high metal purity. Some tools are being improved through use of vacuum-melted metals.

Coming — Other industries are investigating the possibility of adapting vacuum metal to their requirements. Researchers are studying applications in jewelers' dies, valves, auto turbine rotors and electronics.

Goals of researchers are lower costs and broader applications. As a tool for research and development, vacuum melting comes under increasing study at such firms as Thompson Products Inc. and Alloys Precision Casting Co. in Cleveland and Westinghouse Electric Corp. in Pittsburgh.

Growth Curve—While some producers expect a slow, steady growth in applications, others predict a sales explosion. That's a distinct possibility if a large proportion of tool steel users start demanding the metal, or if aircraft applications continue to soar.

This creates a knotty problem for interested firms. They don't want to tie up capital in equipment for today's needs which might not meet demands five years hence. The difficulty is solved in part, since Consolidated Vacuum engineers have designed a furnace which can be expanded in capacity at relatively low cost.

Future Expansion—Last year, vacuum metal production was estimated at 20 to 25 tons a month. Installations in 1955 have boosted output to about 100 tons a month. This is well below capacity. One major producer concentrates so heavily in research that it operates at only 40 per cent of its potential. More capacity is coming. At least two firms will announce expansion programs within the next month.

Taconite Production Rolls

With the first of 12 sections ready to go, Reserve Mining Co. starts commercial pellet output at its E. W. Davis Works in Silver Bay, Minn.

ANNUAL capacity of 3,375,000 long tons of iron ore pellets is going in at the Davis works of Reserve Mining Co.

The first of 12 sections was started up at the taconite plant last week. Operating experience gained will be put into practice as the remaining sections are completed during the next three or four months.

When Completed — Output will be shipped to blast furnaces of Republic Steel Corp. and Armco Steel Corp., joint owners of the $190-million project.

It's doubtful if any pellets can be sent down the lakes this shipping season. Operation of the processing plant will be on a year-round basis, with the pellets being stockpiled during the winter.

Preliminary—Tests in the concentrating plant have been good. Reserve Mining had expected more than normal problems in starting taconite production on a large scale. But W. M. Kelley, president of Reserve Mining, reports problems have been few and relatively minor.

Not Finished — Major work ahead includes a concentrating building for grinding, magnetic separation and filtering; the pelletizing plant where taconite concentrate will be rolled into balls and burned hard to make finished pellets; an ore bridge and other loading facilities.

Armco Steel Boosts Expansion

Armco Steel Corp., Middletown, O., is stepping up its 1955 expansion program from $60 million to $111 million.

President W. W. Sebald announced that his firm's capacity will be 6.1 million tons by early 1957—an increase of nearly 25 per cent.

While a relatively large portion of the $111 million will go for steel capacity, major additions also will be made to rolling and finishing facilities. Among them will be a new strip mill at Butler, Pa. Several rolling mills will be revamped.

Copperweld Steel to Expund

Copperweld Steel Co., Pittsburgh, is ready to finance a $12-million modernization and expansion program aimed at completion in 1957.

Look for more taconite piles like this as Reserve Mining boosts production

Senate subcommittee urges action on U.S. manganese as . . .

Purchase Program Fades

SEN. JAMES E. MURRAY's Materials and Fuels subcommittee has issued a strong recommendation for immediate action on domestic manganese production.

Its report states:

"To maintain a realistic domestic mobilization base in manganese, continuing purchase programs at adequate prices are warranted; and plants to process the ores should be built as soon as possible."

Reasons—In the subcommittee's opinion the federal purchase of large quantities of low-grade manganese ores has been fully justified. It points out that the material can be beneficiated; national defense makes it imperative that this nation have sufficient stored reserves; and it is necessary that the U. S. have a continuously operating manganese industry.

The report explains that too much time has been wasted in "experimental dilly-dallying" with the processing of low-grade manganese reserves. "The time has arrived," recommends the report, "to do adequate pilot-plant work with a view to building full-scale plants to upgrade the presently stored low-grade ores. Such plants should be privately operated, but should have Bureau of Mines supervision."

History — The government's manganese purchase program originally started during World War II, ended in 1945 and was reinstituted under the Defense Production Act of 1950. Under 1950 provisions, quotas were set up for purchasing depots. One purchase depot is already closed, having reached its assigned quota.

The Bureau of Mines spent some $7 million from 1947 through fiscal 1955 on studies pertaining to manganese deposits and beneficiation. The subcommittee report states: "Year after year, research continues until it almost begins to appear that it is research for the sake of research alone. The Bureau of Mines has failed to come up with any constructive over-all plan or program in respect to manganese." The subcommittee's strongest recommendations: 1. Start pilot-plant work now. 2. Build full-scale plants as soon as possible. 3. Keep quotas open for buying low-grade manganese ores.

More Mobilization Plans

Air Force officials are talking about two policies which will improve industry's readiness for mobilization and reduce lead time in aircraft production.

Although details are sketchy, the plans have fancy titles: "Production Acceleration Capability Concept" aims at helping manufacturers prepare to boost their production rapidly in emergencies. "Production Compression Concept" is a squeeze play set up to help aircraft companies hit maximum output during a 30, 60 or 90-day period.

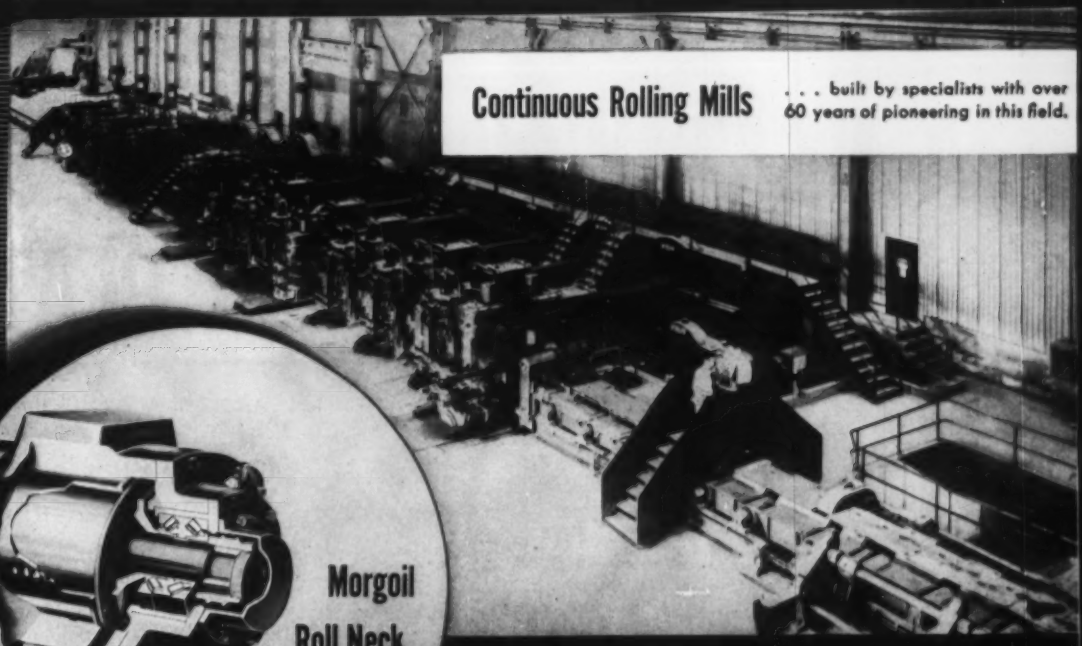
The first plan would be used where production limitations are based on material shortages. The second is to be applied on strategic and air defense systems.

Meet William J. Jones: Newly appointed director of the Automotive Division, Business & Defense Services Administration.

Mr. Jones is on loan to BDSA from his position as assistant general production manager of Chrysler Corp. He has been in the automotive industry for 31 years.

Here and There

Congressional trust busters have a beady eye on the automotive industry. They've been studying questionnaires, listening to testimony on automobile marketing and pricing and checking over the antitrust laws. Next year's target area apparently will be Detroit, with General Motors Corp. up for a potential investigation . . . Disaster and war damage insurance sponsored by the government will probably end up as a $1.5-to-$2-billion program to be tried out over a three-year period. A Senate Banking Committee staff study bases these figures on the amount of damage done by the recent hurricane and floods in the Northeast. Unsolved problem: Lack of response to this and other suggestions by private insurance groups . . . The Reclamation Bureau will call for bids on approximately $51 million in major construction projects by next June. Projects will include two concrete and two earth storage dams, three power plants, one diversion dam, one diversion tunnel and a pumping plant . . . Gen. Thomas D. White, Air Force chief of staff, reports the Air Force will have a nuclear-powered bomber in the air "sometime within the next decade." He adds the guided missiles can do a lot, but they never will completely replace manned aircraft . . . The Congressional Joint Economic Subcommittee opens public hearing (Oct. 14-28) on problems of automation and technological development. Rep. Wright Patman will hear the views of top labor leaders and businessmen.



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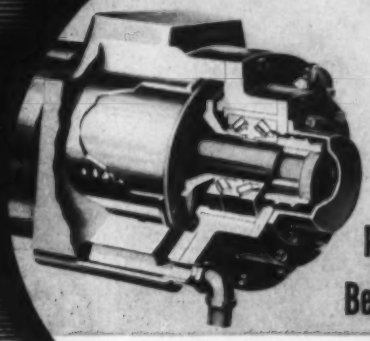

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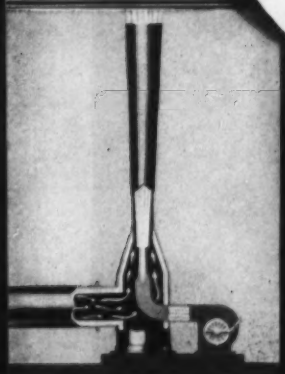

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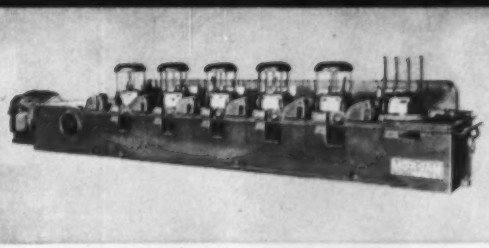
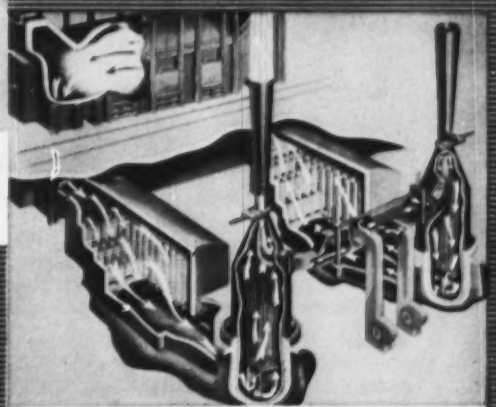
. . . efficiently handle hot gases and fumes as high as 3000° F.



Wire Machines . . . Morgan-Connors give high production, with low die cost, low power cost, low space requirement.



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Whatever your application . . . in new construction . . . new equipment . . . or replacement jobs, Jal-Tread will assure you of these advantages:

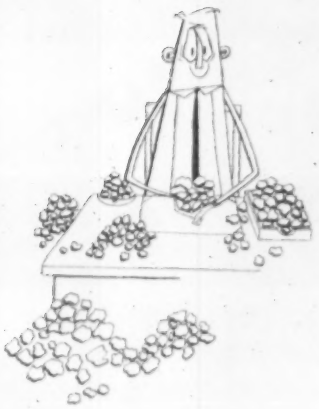
Safe Footing—300 miniature squares per square foot—all of uniform height—provide maximum linear friction surface that protects you against lost-time accidents.

Easy Fabrication—The Jal-Tread straight line pattern simplifies welding, flanging, shearing, bending, punching, and drilling operations. Experience shows that Jal-Tread can be cold-formed on standard plate bending machines.

Easy Cleaning—The Jal-Tread straight line gutter pattern permits quick, thorough sweeping and draining in any direction.

For safe, long-lasting flooring always specify J&L Jal-Tread *. . . it's available at leading distributors everywhere.*

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*



Cliffs' J. S. Wilbur: Ore Specialist

HE'S A SALES vice president with a prospect list of less than 35 buyers in the U.S. and Canada for his major product—a product that accounts for the overwhelming bulk of his company's sales.

In this age of industrial diversification, that situation would seem to cry for more product lines to generate more sales opportunities.

Does It?—"Not at all," says John S. Wilbur, vice president-sales for Cleveland-Cliffs Iron Co. He points out that Cliffs is actually going in the opposite direction; it withdrew from most of its coal business a year ago to concentrate more on iron ore production and development. "For our problems," says he, "specialization, not diversification, appears to be the solution." Concentrating on iron ore in 1955, Cliffs will have record ore sales.

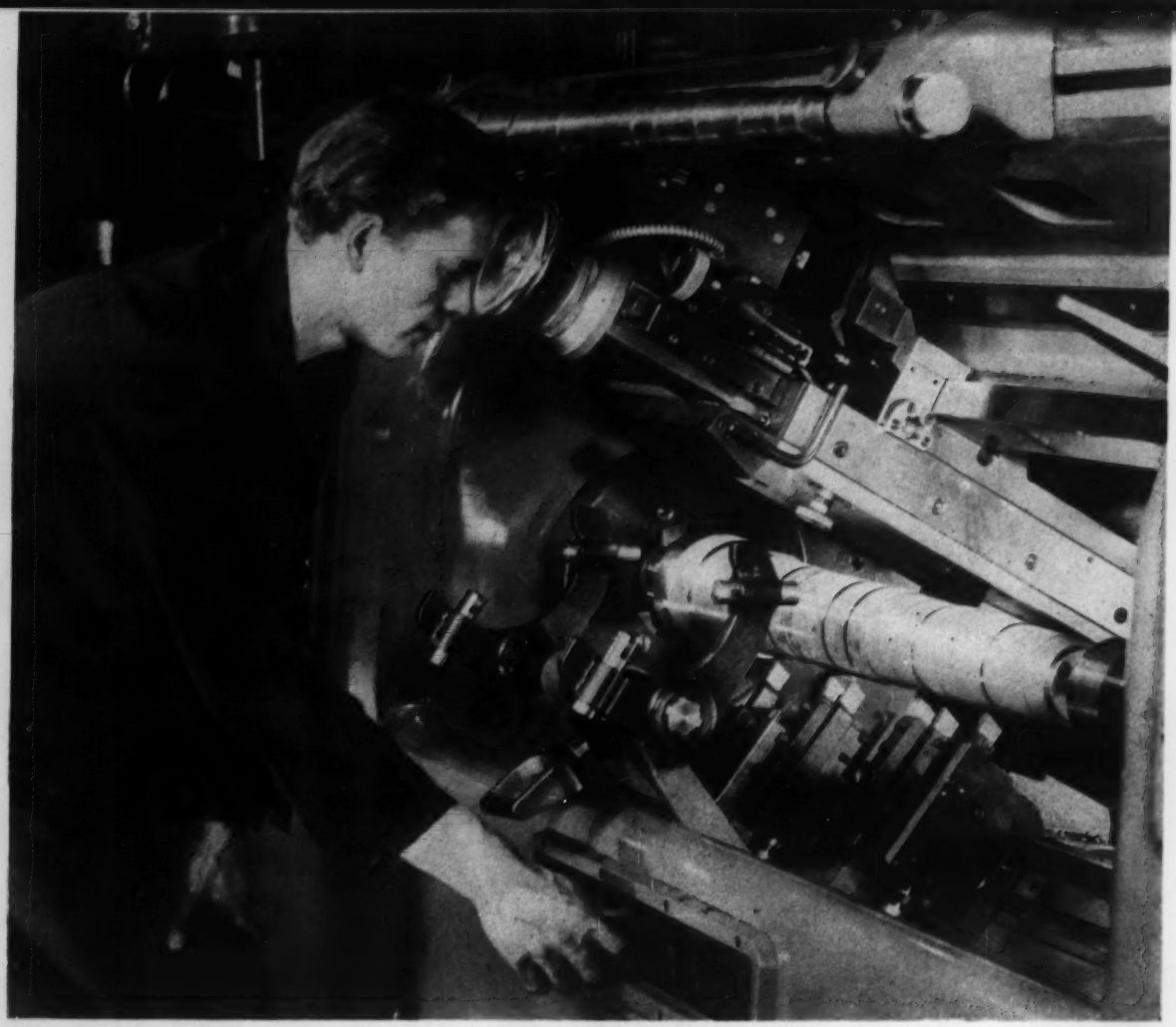
Only about 35 companies in the U.S. and Canada operate blast furnaces and are buyers of iron ore. Some mine their own ore and are out of the open market. Some are too far away from Cliffs' mines to be purchasers.

Peak Season—Although the Lake Superior shipping season is drawing to a close, the peak of the selling year is just starting. "We try to line up our contracts in late fall and winter," says Mr. Wilbur. The bulk of Cliffs sales are handled on long-term contracts that run several years. Many don't provide for specific tonnage deliveries but call for the ore company to deliver the raw material in proportion to the buyer's consuming rate, with minimum levels.

A big part of Mr. Wilbur's job is to forecast steel industry production. His prediction now: Mills will operate at present levels of 90 per cent of capacity or better through the first quarter of 1956. After that, there could be moderate declines.

Future—Prospects for the steel industry are excellent . . . not only for the few months ahead but for the coming years, says Mr. Wilbur. "Cliffs has been in business since 1850. By concentrating on mining, preparing and shipping quality ore, we expect to be in business for at least another 105 years."

Iron ore specialist Wilbur wasn't always wedded to that raw material. He started out, after being graduated from Yale in 1933, as a salesman for Electro Metallurgical Co., division of Union Carbide & Carbon Co. He joined Cliffs in 1940, took time out for Army service from 1941 to 1945 and became a Cliffs vice president in 1952. He and Mrs. Wilbur have three daughters and a son.



Heavy-duty streamlined copying lathe built by Heidenreich & Harbeck is powered with 40-hp motor for 2½-in. carbide tools

There's not much yet, but you can expect . . .

More Automation in Germany

AT UNTERTURKHEIM outside Stuttgart in West Germany, Daimler-Benz A.G. has a big plant for manufacturing parts and subassemblies for the Mercedes 180.

A half dozen parallel lines of machine tools perform a sequence of operations on engine, transmission and differential parts that are fed into a pair of assembly lines.

Most machine tools are of the single-purpose type brought in after the war to get production going as quickly as possible. Now, some of these machines are being pulled out and replaced with completely automated operations.

For Instance — Ludwigsburger Maschinbau GmbH, Ludwigsburg, has installed a line that performs 18 operations, including boring, milling, drilling, tapping and facing, on each half of the rear axle housing.

Elsewhere in German industry, where volume of production warrants automated lines, single automatic machines and conveyor-line assembly methods are moving in. However, as yet there's not the same incentive to go automatic as in the U. S.

Difference — The difference is aptly expressed by Dr. H. C. Boden, president of AEG which has 100,000 employees and products about paralleling those of General Electric and Westinghouse. "We apply more labor and less material. In the U. S. you talk more about labor-saving machinery."

The machine industry is exceedingly active with 3784 companies —1190 employ more than 100 workers; 340 employ more than 500. Its 660,000 workers turn out $3 billion in equipment a year, of which 40 per cent is exported.

Machine tools comprise the biggest segment, with 65,000 workers employed by 900 firms. Production is at the annual rate of $250 million. Half goes abroad.

Promotion—Most of the German equipment builders are organized into the Verein Deutscher Ma-

schinenbau-Anstalten, or Association of German Machinery Manufacturers, with headquarters in Dusseldorf-Oberkassel. This group assembles statistics, handles trade shows and gets out a thick buyer's guide in German, English, French and Spanish. Helmuth Vollrath of VDMA says machine tool order backlogs range from 12 to 18 months and are expanding.

Schiess A.G.—Founded in 1866 by Ernst Schiess, this company became one of the largest builders of heavy machines in Germany, including planers, horizontal boring mills and large hobbers.

At the end of the war, 80 per cent of its production equipment was shipped to Russia, 15 per cent to Yugoslavia and 5 per cent to Albania.

Schiess now employs 3000 workers on two shifts, of which 1200 are on machine tools. Of $22 million annual sales, two-thirds are in machine tools. Half the tool output is exported. On a $1.7 million order for Spain, 45-year credit was arranged.

Willi Wallrodt, director, says German custom-built machine tools sell at about 20 to 30 per cent under U. S. prices but differentials on assembly line tools are smaller. Schiess had a license from Jones & Lamson for a semiautomatic lathe. Giddings & Lewis is interested in Schiess' double column boring mill and Schiess in G & L's horizontal boring mill. Schiess builds textile machines to Sacco-Lowell designs for Europe.

Schiess is going after a share of the American market. Kurt Orban Co., New York, is for sales; American Schiess Corp., Pittsburgh, is for service.

Heidenreich & Harbeck — Along with a large portion of Hamburg's industry, Heidenreich & Harbeck's plant was damaged in the war.

Enough equipment was dug out of the ruins to resume production with textile spinning machines in 1948 when it still was uncertain whether machine tools could be built.

H. & H. employs 2200 men in making its own castings and parts for a line of standard and automatic lathes.

One automatic copying lathe handles work up to 40 in. long and 10 in. in diameter. A saddle-type turret lathe is designed for punch-card preselector programming.

Pee-Wee—In West Berlin, Pee-Wee Maschinen und Apparatebau is still digging out ruined sections of its plant to expand production.

Pee-Wee developed a machine for rolling speedometer gears for Daimler-Benz, Volkswagen and Austin of England. Another machine rolls truck driveshaft splines in 20 seconds that would require a half hour by hobbing, says Engineer W. Moeltzner.

Heavy Equipment—Schloemann A. G. has 400 designers and engineers at work in its new building in downtown Dusseldorf on rolling mill and press equipment. President Bernhard Knapp says his company is especially competitive in selling tailormade equipment for mills in Europe, South America and Japan.

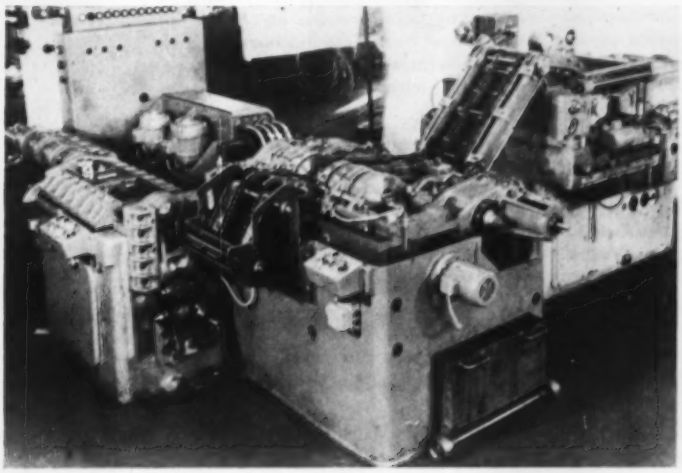
Under the U. S. Air Force Heavy Press Program, Schloemann built a 14,000-ton extrusion press for Alcoa at Lafayette, Ind. The press handles billets from 15¼ to 29¼-in. in diameter and up to 72 in. long. Alcoa's Los Angeles plant will get a 7000-ton Schloemann forging press. Feller Engineering Co., Pittsburgh, represents Schloemann in the U. S.

Demag and Mannesmann are large builders of steel mill and related equipment for both the home and export market. Demag has the subcontract from Krupp for a mill in Pakistan.

Materials Handling — German plants use overhead cranes, hoists, some powered conveyors and obsolete caster-wheeled hand trucks. A few monorail conveyors are used. One steel company plans a 40-ton installation. Power lift trucks aren't used much.

Report on Europe

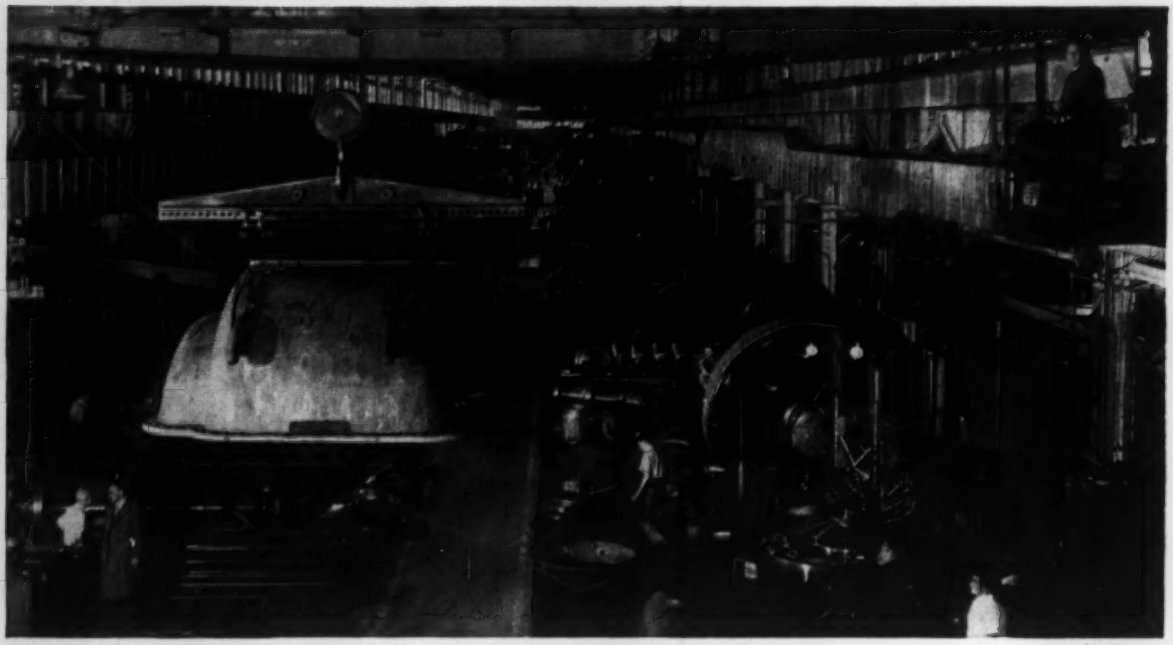
Back from a six-week tour of West Europe, STEEL's editor, Irwin H. Such, reports his findings in this article, the seventh of a series.



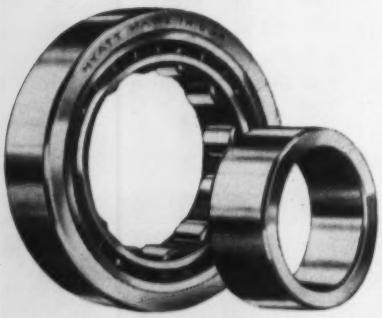
Coiled steel is straightened, drawn to size, cut into lengths, threaded and formed into U-bolts in machine developed by Pee-Wee in West Berlin

Automated line machines cylinder heads for the Mercedes 180 at Daimler-Benz plant in Germany

HOW PRODUCTION WILL CLIMB IN YOUR PLANT



when you hand the heavy loads to HYATTS!



THINGS RUN SMOOTHER LONGER ON

Keeping production curving upward—*and keeping costs in line*—is one of your primary interests as a management man. And here, again, is where HYATTS can help you!

HYATTS' phenomenal ability to "take it" results in significantly longer life expectancy—and hence *greater utilization of equipment with lower maintenance costs*—than "run-of-the-mill" roller bearings can possibly provide. Why? Because right at the outset, HYATT selects the choicest steels from America's foremost producers, instead of depending on a single limited source. Then these premium steels are heat-treated, machined, formed and inspected with fantastic precision on the finest equipment money can buy. And from drawing board to final installation recommendations, you profit from the fact that HYATT has more roller bearing engineering know-how than anyone else in the business.

That's why it's *good business* on your part to see that if HYATTS aren't already being specified for roller bearing replacements in your plant today, they *will* be from tomorrow on. By preventing bearing-failure bottlenecks, HYATTS can give your production curve a surprising lift—*at the same time they're saving you a surprising lot of money!*

HYATT

ROLLER BEARINGS

STRAIGHT ○ BARREL ○ TAPER ○

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

By FLOYD G. LAWRENCE *Detroit Editor*

New parts, metals, processes in this Chrysler and other 1956 cars hint . . .

Revolution Pops in Materials, Methods

SOME AUTOMAKER metallurgists and materials engineers are beginning to wonder if they are building today's cars too well.

Don't misinterpret that statement. Engineers don't want your car to break down. They spend plenty of hours and money to insure its reliability and longer service life. But there's a growing shift in the problems of materials and methods that's beginning to make them wonder if your car isn't overengineered in some departments.

Switch—Here's how one metallurgist expressed the problem to STEEL last week: "We used to spend most of our time handling service failures. Parts that let go in the field were analyzed to find out why, and frequently our specifications were changed accordingly. Now, we seldom get a part which has failed in service; if we do, almost invariably it is one which did not meet our specifications, and we send the problem back to manufacturing."

Automakers feel they have established the fact that they can build reliable cars. The thought that anything made better than it needs to be costs more than it needs to cost is bringing about a re-examination of methods and materials to squeeze out still more costs. The appraisal is becoming a major factor in the competitive battle. For many auto companies, a thorough program of parts re-evaluation is looming larger on the agenda than ever before.

Steel—One growing factor in the materials picture, for example, is low carbon steel. Occasionally, improved heat-treating techniques are the key to quality and service life which could not previously be achieved. Shifting functions of parts, too, are entering the picture. Bumpers which used to be considered a defense in collisions are recognized as primarily useful in parking skirmishes. Moreover, they are becoming a major part of the style picture, which means that formability is increasingly significant. Although they will dent, low carbon steel bumpers will be on more cars than ever in 1957.

A good example of low carbon in a mechanical part is Chrysler Corp.'s PowerFlite transmission countershaft. Formerly 4024, this part is replaced with 1024, thanks to improved heat treating which reduces distortion and permits holding closer tolerances. Tests

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with ammonium carbonitriding indicate that similar changes in other parts may be coming.

Method—Another Chrysler Corp. part of interest is an aluminum pinion carrier in the same transmission. Produced as a diecasting, this part markedly reduces machining operations with no loss in function over the previous ferrous part. Packard is using a diecast transmission case.

Another fabrication technique which can be used with increasing scope on aluminum is impact extrusion. One metallurgist advises watching this method closely. Chrysler is going to an impact extruded torque reaction shaft in its PowerFlite.

Aluminum—Other impact extrusions used by Chrysler include wheel brake cylinder pistons, spark plug protector tubes and a variety of power steering unit components. Watch for aluminum, too, to increase as decorative trim. Cadillac in 1957 offers aluminum grilles and forged aluminum wheels in matching anodized finish. Not only is stainless steel used for many trim parts expensive, but stylists figure the "aluminum" look is highly desirable in the trend to aircraft-like styling motifs. A 5-to-10-lb-per-car increase in 1956 model consumption of aluminum should be eclipsed by an even greater hike in 1957—and automakers consider aluminum as being in short supply.

Typical of the competition aluminum faces is pearlitic malleable, which, in turn, is often a substitute for forgings. One GM division is reported shifting to shell molded pearlitic malleable camshafts and crankshafts in 1957 in a bid to reduce machining. One example of the speed with which changes are being made and the trend toward reexamination of familiar processes is a camshaft thrust plate of one manufacturer. A short time ago it was a forging, then a carbo-nitride hardened stamping. Now it's a gray iron casting.

Economics—Switches like that make it difficult to predict just what direction any specific part will take. Compounding the problem is the fact that automakers already have facilities which cost money and are not depreciated. A shell-molded crankshaft may look fine, but if you have forging facilities, savings must: 1. Pay for new shell-molding equipment. 2. Pay for scrapping the forge shop.

Plastics and rubber are growing in auto applications. Water pump impellers, for example, are cast in phenolic material on the Big Three products. Dodge is reported ready to offer nylon kingpin bushings which will not require lubrication, replacing present bronze bushings. Plastic foam is getting a close look by many manufacturers as a seat padding material which could substantially reduce the need for springs beneath it. A Saran fabric fuel filter is used by Chrysler Corp., replacing a powdered metal unit.

Examples—A rubber parking lamp housing is being supplied to an automaker which combines in one unit the sealing, insulation and lamp housing function. It offers substantial savings over the stamping assembly and rubber fittings used before. Polyethylene and nylon clips are being used to attach some body trim, providing a fastening device and a seal. A big possibility in the near future is plastic body solder, replacing the costly lead used to fill body joints and form contours between panels.

Perhaps more than any single industry, the automakers run the spectrum of materials and methods. As they re-evaluate their ways of doing things, metalworking undoubtedly will feel the impact strongly. Some will benefit from ideas they can use on their own products; others will find increasing need to speed up their own process re-evaluation to remain strong as auto industry suppliers.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031	635,540
July	815,324	543,344
August	736,039	523,799
September	567,703†	364,441
October		312,078
November		616,395
December		761,954
Total		6,896,678

Week Ended	1955	1954
Sept. 10	98,546	84,743
Sept. 17	146,484	74,026
Sept. 24	151,804	72,804
Oct. 1	144,534	84,110
Oct. 8	102,298†	81,610
Oct. 15	110,000*	59,511

†Preliminary *Estimated by STEEL
Source: *Ward's Automotive Reports*

Exhaust Notes

New Rambler production facilities went into operation last week at American Motors' Kenosha, Wis., plant. Expanding production capacity of these cars by 60 per cent, the facilities include a separate final assembly line, new subassembly and feeder lines and new inspection and testing facilities. Conveyor systems were enlarged, welding capacity was increased and additional painting equipment was installed. Incidentally, Rambler bodies and sheet metal are painted as a unit similar in approach to the new Chrysler system, eliminating fender storage and simplifying multitone combinations. Overhead conveyors carry bodies from the time they leave storage until they are set down on their own wheels.

Volkswagen representatives are already contacting suppliers in this country to get components when its new plant goes into operation at New Brunswick, N. J. The four-cylinder engine and other basic parts will continue to be made in Germany, then assembled in this country, but parts which can be made economically in this country will be. Suppliers of some commodities already contacted report the Germans are insisting on unusual standards—alloy purity in decorative parts, for example. VW sales in this country should hit 25,000 in 1955, incidentally, compared with about 8000 Metropolitans.

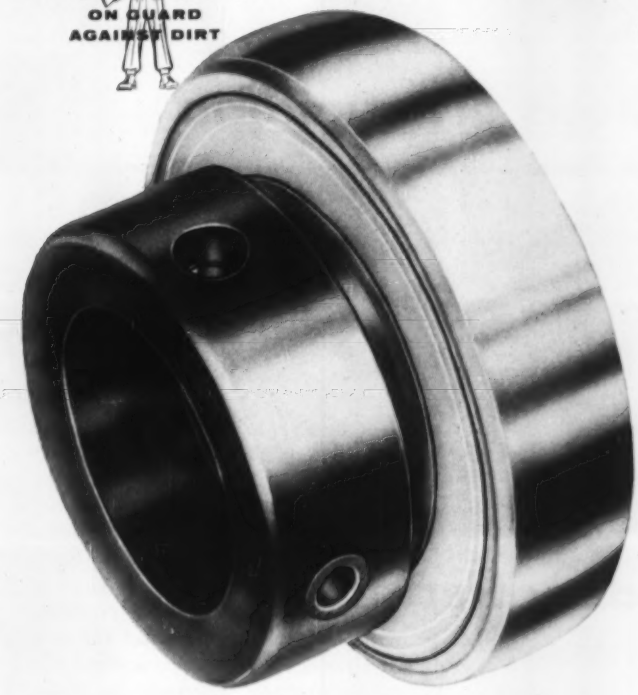
With the 1956 DeSoto being announced today, Chrysler has its full line of 1956 cars on the road except for Plymouth.

FACTS

about

NEW DEPARTURE

BALL BEARINGS

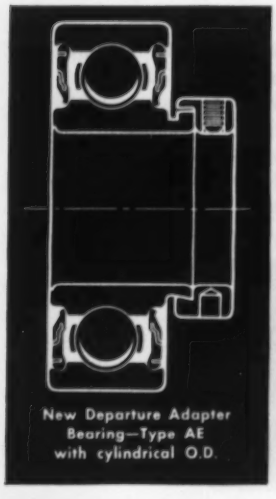


Adapter bearings for fast, easy mountings at low cost!

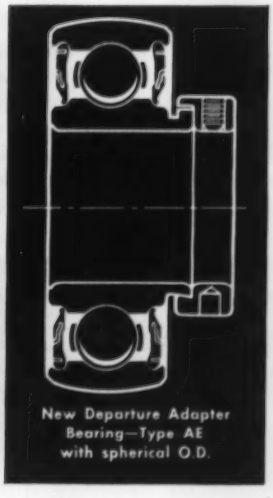
New Departure adapter ball bearings provide inexpensive mountings for many applications.

They are precision bearings, pre-lubricated and efficiently sealed. Also available with stamped flanges, these bearings become complete, initially aligned units for quick assembly.

Designed for moderate loads and speeds and for applications where alignment and concentricity are not critical, the bearings eliminate need for shaft shoulders, ground bearing seats or press fits. The eccentric cam has a self-locking action when tightened against rotation and is intended for uni-directional rotation. New, highly efficient Sentri-Seals give the bearings optimum protection against dirt . . . longer life without attention.



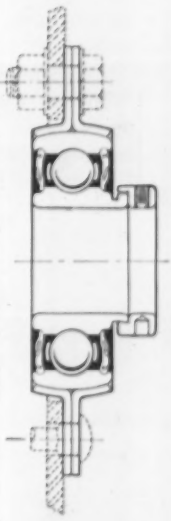
New Departure Adapter Bearing—Type AE with cylindrical O.D.



New Departure Adapter Bearing—Type AE with spherical O.D.

TYPICAL APPLICATION OF NEW DEPARTURE ADAPTER BEARINGS

New Departure adapter bearings—Type AE—may be used to especial advantage on farm implements and machines operating at moderate speeds. Bearings with loosely assembled flanges are slipped on the shaft and lightly bolted to side plates. After flanges are finally secured, locking collars are tightened in direction opposite rotation and fixed by set screw. Dimensions and load ratings of various adapter bearings are listed in the latest New Departure catalog.



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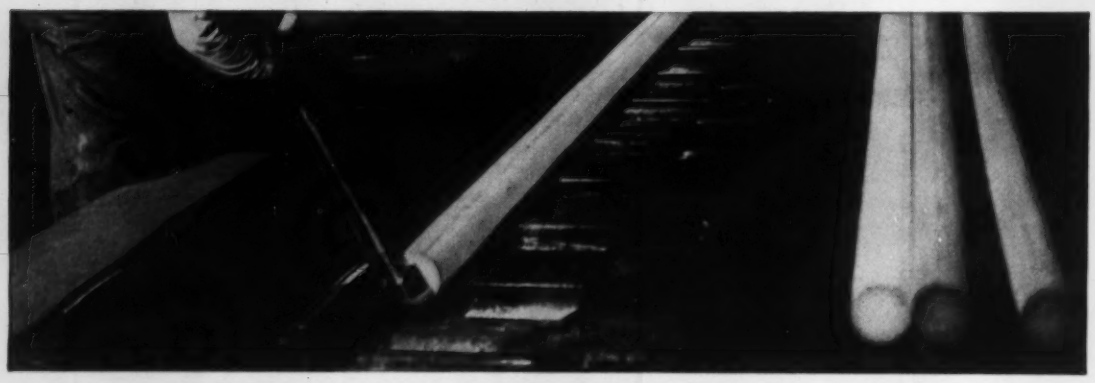
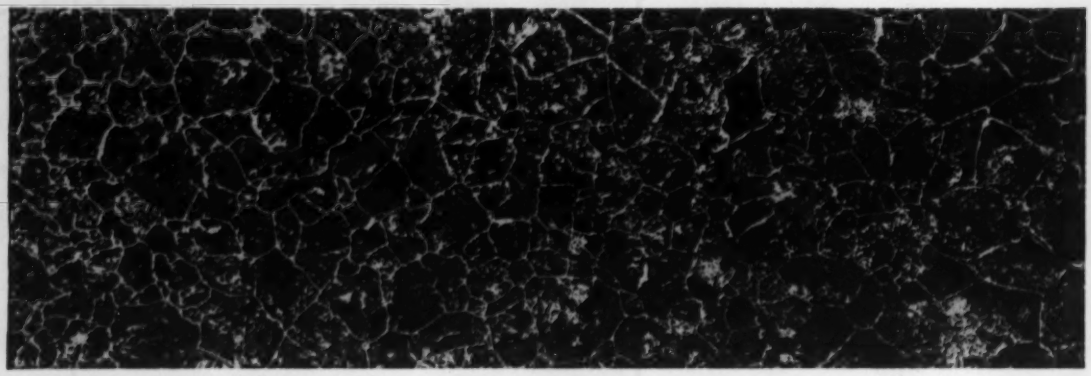
INDIVIDUAL HANDLING...one good reason



TIMKEN® forging steels give uniform



grain size order after order

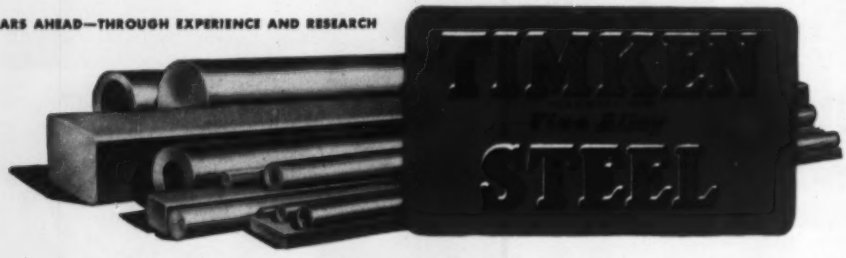
THERE are good reasons for the uniform grain size in every piece of Timken® forging steel, as shown in the photomicrograph above. And good reasons, too, why you get the grain size you want order after order.

Your order for Timken forging steels is handled individually in our mills and we target conditioning procedure to your particular forging requirements. In the top photo, a billet is stamped to identify the heat and ingot it came from—one way we can make sure you get uniform grain size from shipment to shipment.

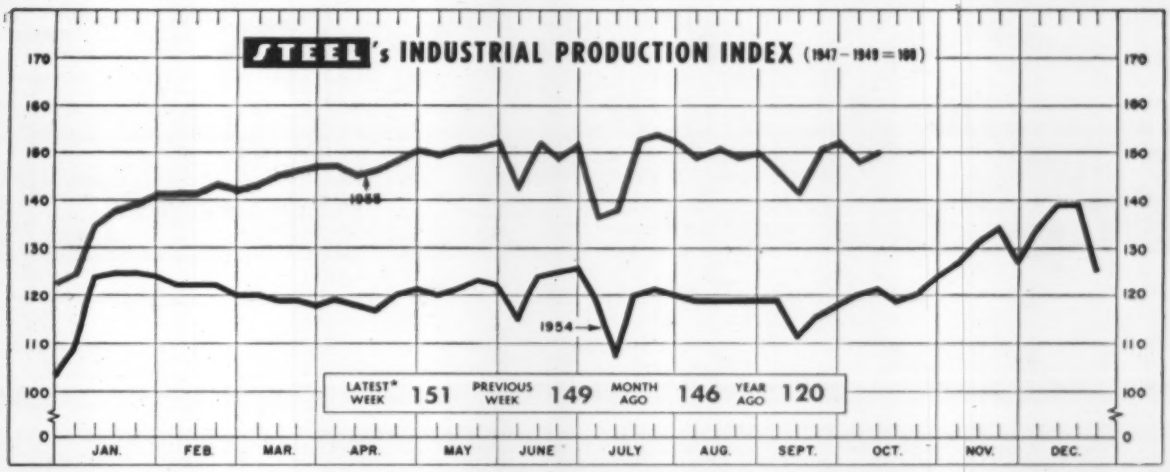
Uniform grain size after heat treatment is assured by spectrometric or microscopic examination of every heat. The result—you can be sure that forgings made from Timken forging steels have uniformly high ductility and resistance to impact.

You have fewer furnace temperature adjustments when you use Timken forging steels. Every lot responds uniformly to heat treatment because every lot has the same physical and chemical properties. Always specify Timken forging steels. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Oct. 8. Based upon and weighted as follows: Steel Output, 35%; Electric Power Output, 32%; Freight Car Loadings, 22%; and Auto Assemblies, 11%

Construction Steamrollers to New Highs

SPENDING last month for new building sailed over the $4-billion mark for the first time, topping off the biggest third quarter and best first nine months the construction business has ever had.

Outlook for fourth quarter: Down from last quarter's $11.9 billion, mostly because of the industry's usual cold weather slackoff—but still good enough to push construction spending for the year over $41 billion. That will be almost 10 per cent better than last year's all-time high of $37.6 billion.

Gains Ahead — Total spending this year is $31.1 billion, 12 per cent higher than at this time a year ago. That means construction outlays in the fourth quarter of close to $10 billion, if predictions for the year are going to be upheld.

For 1956, the experts already are forecasting new records—about 5 per cent up from the 1955 total. A catch: About half the gain will come from increased costs of labor and materials.

New Plants—One of the brightest facets in this year's building picture is industrial construction. September spending hit $210 million (the best month ever) and boosted outlays for the year 15 per cent higher than a year ago.

Another gainer is commercial building, 35 per cent ahead of last year so far. Both industrial and commercial outlays reflect businessmen's confidence that good times are ahead, and those categories are expected to play a big role in setting a new construction spending record next year.

Houses Dip—They'll have to. Housing is expected to fall off from 1.3 million this year to about 1.2 million. Being blamed: Tighter credit.

F. W. Dodge Corp. says: "Tightened housing credit showed definite results in reduced residential building contract volume in September. For the first time since December, 1953, Dodge's monthly

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,350[1]	2,334	1,735
Electric Power Distributed (million kw-hr)	10,750[1]	10,627	9,158
Bitum. Coal Output (1000 tons)	9,575	9,630	8,116
Petroleum Production (daily avg—1000 bbl)	6,670[1]	6,661	6,145
Construction Volume (*ENR*—millions)	$465	$266	$193
Automobile, Truck Output (*Ward's*—units)	102,298[1]	144,534	81,610
TRADE			
Freight Car Loadings (1000 cars)	815[1]	820	722
Business Failures (Dun & Bradstreet, no.)	185[1]	186	192
Currency in Circulation (millions)[3]	$30,428	$30,323	$30,051
Dept. Store Sales (changes from year ago)[4]	+15%	+3%	−2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,104	$20,317	$20,962
Federal Gross Debt (billions)	$277,524	$278,352	$274,838
Bond Volume, NYSE (millions)	$20,954	$37,455	$15,338
Stocks Sales, NYSE (thousands of shares)	10,513	21,693	10,788
Loans and Investments (billions)[4]	$84,503	$84,516	$83,222
U. S. Govt. Obligations Held (billions)[4]	$30,347	$30,546	$35,696
PRICES			
STEEL's Finished Steel Price Index[5]	208.97	207.63	194.53
STEEL's Nonferrous Metal Price Index[6]	279.9	262.3	218.9
All Commodities[7]	111.1	111.4	109.7
Commodities Other than Farm & Foods[7]	118.0	118.0	114.5

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100

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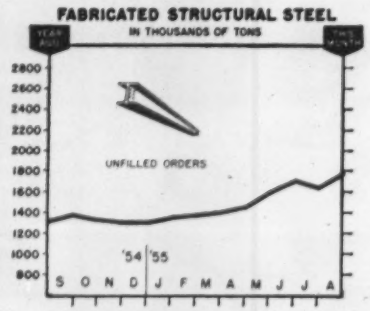
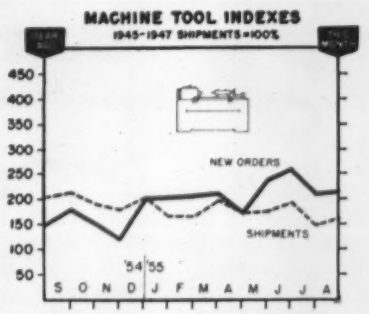
• AMERICA'S BEST KNOWN JOB STAMPING MANUFACTURER

THE BUSINESS TREND





	Shipments 1955	Shipments 1954	Backlogs 1955	Backlogs 1954
Jan.	225.8	245.6	1,346	1,686
Feb.	213.4	253.1	1,360	1,697
Mar.	227.8	285.4	1,392	1,645
Apr.	239.7	293.5	1,444	1,566
May	223.2	253.9	1,592	1,490
June	282.3	290.3	1,706	1,391
July	219.4	265.2	1,639	1,429
Aug.	266.7	272.5	1,776	1,270
Sept.	....	265.4	....	1,329
Oct.	....	258.4	....	1,294
Nov.	....	228.7	....	1,280
Dec.	....	223.5	....	1,281
Total	....	3,135.5		

American Institute of Steel Construction
Charts copyrighted, 1955, STEEL

	New Orders 1955	New Orders 1954	Shipments 1955	Shipments 1954
Jan.	203.0	173.5	167.3	319.4
Feb.	209.4	159.8	168.2	323.1
Mar.	214.6	169.6	202.5	327.2
Apr.	178.1	142.8	180.1	302.7
May	243.7	139.5	180.9	270.3
June	263.2	185.2	198.8	276.3
July	217.8	124.7	152.9	205.7
Aug.	221.1*	147.9	165.0*	203.7
Sept.	....	180.9	....	213.4
Oct.	....	148.9	....	191.0
Nov.	....	119.5	....	179.5
Dec.	....	202.9	....	203.4

*Preliminary
National Machine Tool Builders' Assn.

residential classification failed to show a gain over the corresponding month of the year before."

Indicating that there's still plenty of oomph left in the industry's boom, though, Dodge's tabulation of total September building and engineering contracts in 37 eastern states was $2035 million. That's a 12-per-cent gain over last year and the seventeenth straight month to show a gain over the same period of a year earlier.

Optimism and a Challenge . . .

The U. S. is on the threshold of a $400-billion economy, says Dr. Arthur F. Burns, chairman of the President's Council of Economic Advisors.

The challenge now, he says: "Is to cross this line and go well beyond it." That means developing conditions so lagging industries and areas may join in the advances, extending the good times and improving the quality of living.

But he warned that prosperity often brings on practices that result in its own downfall. He credits government action with holding excesses in check to a considerable degree.

Elements of strength, he says, are: 1. The business expansion has been achieved mainly through the activities of private citizens, not by stepped-up government spending. 2. The nation's expanding income is being shared widely. 3. Inventories, except for farm surpluses, are in "favorable relation to the nation's business." 4. Our own expansion has been paralleled in other areas of the free world, Western Europe in particular.

Two-Refrigerator Families . . .

Sixty per cent of American homes will be air conditioned by 1965, and annual sales of refrigerators and automatic washers will have increased by 1 million units, predicts Roger M. Kyes, vice president of General Motors.

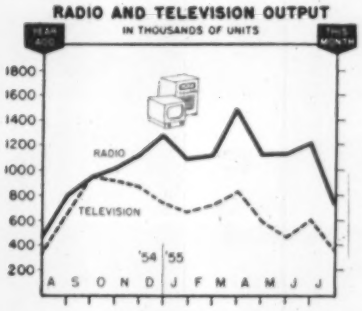
"Over the next decade or so we have the opportunity to make the appliance industry as important a factor in the economy as the automobile industry is today," says Mr. Kyes who heads up GM's Dayton, Household Appliance and GMC Truck group.

Lesson from Detroit . . .

Judging from his remarks, you can expect auto-selling tactics to

RADIO AND TELEVISION OUTPUT

IN THOUSANDS OF UNITS

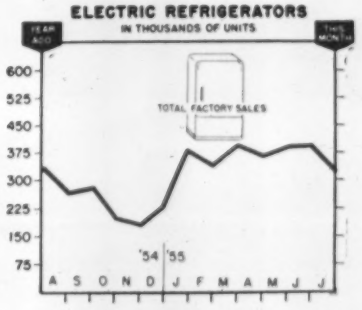


	Radio		Television	
	1955	1954	1955	1954
Jan.	1,068	872	655	421
Feb.	1,090	769	703	427
Mar.	1,482	940	831	600
Apr.	1,100	745	583	458
May	1,114	722	467	396
June	1,205	838	590	544
July	718	438	344	307
Aug.		785		633
Sept.		932		948
Oct.		998		921
Nov.		1,099		859
Dec.		1,262		833
Total		10,400		7,347

Radio-Electronics-Television Mfrs. Assn.

ELECTRIC REFRIGERATORS

IN THOUSANDS OF UNITS



	Total Factory Sales—Units		
	1955	1954	1953
Jan.	381,197	341,401	325,186
Feb.	338,575	331,122	377,605
Mar.	392,774	330,641	368,498
Apr.	364,298	280,900	366,951
May	390,385	282,164	317,667
June	395,936	303,127	343,114
July	323,240	325,061	298,838
Aug.		256,665	232,981
Sept.		271,859	231,224
Oct.		190,753	179,749
Nov.		175,557	139,563
Dec.		228,612	197,102
Total		3,323,562	3,378,478

National Electrical Mfrs. Assn.

come into greater prominence in the appliance field: Comments Mr. Kyes: "I see no reason why we should not have two-refrigerator families as well as two-car families." He said about 10 million two-refrigerator families is "not an unrealistic goal."

Also, he bases part of his optimism about the industry's future on: "The vast replacement market that awaits the enterprising merchant in our industry as the manufacturer brings out new and improved products, creating what we call dynamic obsolescence."

Slated for Frigidaire: "A more orderly and satisfactory method for arriving at trade-in values of used products."

Caution on Price Hikes . . .

Business, especially big business, faces an important decision on pricing policy in the months ahead, says Henry H. Heimann, executive vice president, National Association of Credit Men. Unless increases seem in line to the consumer, he warns, a mild buyers' strike can quickly follow.

Also, he states, an attempt to increase profits beyond the added costs and a fair return automatically brings on added wage demands.

Trends Fore and Aft . . .

"The American economy is continuing to enjoy the best of health, and I am confident that the last three months of 1955 will be as prosperous for business generally as the first nine were," states Harlow H. Curtice, president of General Motors . . . Can production is headed for an all-time record in 1955, reports William C. Stolk, president, American Can Co. . . . Metal treating billings in August were one-third greater than a year ago, says the Metal Treating Institute . . . Amana Refrigeration Inc. expects 1955 volume to exceed 1954's by 50 per cent. By broadening product lines and expanding production facilities, it hopes to boost 1956 output another 50 per cent . . . "The third quarter for U. S. Industries Inc. was better than the two preceding ones, and we expect further improvement in the fourth quarter," says John I. Snyder Jr., chairman and president . . . Sales volume at Federal Screw Works, Detroit, is up 50 per cent over the first fiscal quarter of last year, and incoming orders are at a most satisfactory rate, says B. L. Norton, president.

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Balls

CHROME ALLOY AND STAINLESS

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- Nickel Grain Rolls
- Special Iron Rolls
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- Flintuff Rolls
- Ohio Double-Pour Rolls

Ohio Rolls

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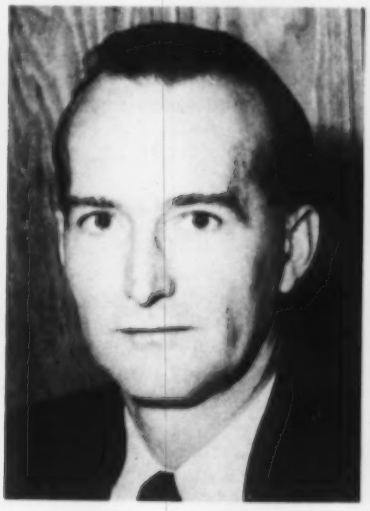
THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • Plants at Lima and Springfield, Ohio

J. J. I. JAMIESON
. . . Republic steel & tubes asst. sales mgr.

E. W. BAUMGARDNER
. . . Trabon Eng. sales manager



ROBERT B. MEACHAM
. . . Buxton Mfg. v. p. and sales mgr.

J. J. I. Jamieson was made assistant general manager of sales, steel and tubes division, **Republic Steel Corp.**, Cleveland. For the last 11 years he has been manager of sales of the mechanical division, steel and tubes.

Lewis W. King, roll department manager, **Birdsboro Steel Foundry & Machine Co.**, Birdsboro, Pa., was appointed assistant to the vice president-engineering. His duties concern the sale of rolling mill machinery and designing of rolls. He is succeeded by **Ralph H. Scholl,** former sales manager of National Roll & Foundry Co.

Sheldon V. Clarke was made manager of the general purchasing department of **Union Carbide & Carbon Corp.**, New York. He succeeds **H. V. Huffard,** retired.

James H. Bechtold was named manager, metallurgy department, research laboratories, **Westinghouse Electric Corp.**, Pittsburgh.

Orvin A. Klema was made chief metallurgist of **Bristol Brass Corp.**, Bristol, Conn. He succeeds **Horace W. Staples,** retired. He was production manager.

John E. Sandberg was made sales manager, **Shenango Steel Co.**, Farrell, Pa. **William E. Kennedy** becomes assistant sales manager. He continues to handle development and expansion of coated strip steel.

E. W. Baumgardner was appointed sales manager of **Trabon Engineering Corp.**, Cleveland. He has been sales manager for the last three years at Industrial Ovens Inc.

James F. Pease, as sales manager, heads the new industrial sales division of **Dayton Pump & Mfg. Co.**, Dayton, O. He was field sales manager.

At the new **Plymouth Division** of Burroughs Corp. at Plymouth, Mich., **Du Ray Stromback** was made manager of engineering; **Byron A. Runde,** chief product engineer; and **Charles Geisheck,** chief product improvement engineer.

International Business Machines Corp., New York, reorganized its electric typewriter division as a completely autonomous operation separate from other divisions of the company. **H. Wisner Miller Jr.**, sales manager since 1947, will be general manager of the newly constituted division. **Henry W. Reis Jr.** was made sales manager and **R. H. Rettew** controller.

E. F. Giguere was named vice president-sales of **Transistor Products Inc.**, Waltham, Mass., an operating unit of Clevite Corp.

Edward F. Jennings was made New York district sales manager for **Laclede-Christy Co.**, division of H. K. Porter Company Inc.

Robert B. Meacham was elected vice president and sales manager, **Buxton Mfg. Co.**, Dover, N. J. He was sales manager of Novelty Steam Boiler Works Inc.

Michiana Products Corp., Michigan City, Ind., named **Norman E. Seymour** works manager of its steel fabricating and oil filter divisions. For the last seven years Mr. Seymour has been with Borg-Warner Corp., recently serving as works manager for its Wooster, O., division.

Harold W. Beder was named general sales manager for **Harris-Seybold Co.**, Cleveland. He was general sales manager for Whitney Chain Co.

Ernest J. Eddy was named purchasing agent for **Gaines-Collins,** Los Angeles.

James L. Toohey Jr. was made a purchasing agent of the new special products division of **Ford Motor Co.**, Dearborn, Mich.

Anthony J. Derrick was made manager of the foundry department of **Kennedy-Van Saun Mfg. & Eng. Corp.**, Danville, Pa. He is in charge of production and sales. Mr. Derrick was with American Brake Shoe Co.

A. P. Controls Corp., Milwaukee, appointed **Arthur W. Krause** chief

methods engineer to succeed **Ed Solski**, now chief industrial engineer.

Lukens Steel Co. merged its Philadelphia and Coatesville, Pa., district sales office. In the new setup, **Edmund Pfeifer** is manager of the Coatesville district sales office and is replaced by **William C. Simpson** as manager, New York sales office.

Truman Jones was named vice president-sales and **Edward W. Forth** vice president-manufacturing at **De Walt Inc.**, Lancaster, Pa., subsidiary of American Machine & Foundry Co. Mr. Jones was general sales manager, Mr. Forth general superintendent.

William M. Goss was elected president, **Scovill Mfg. Co.**, Waterbury, Conn., to succeed **L. P. Sperry** who is now chairman of the board. Mr. Goss was executive vice president. He is succeeded by **Mark L. Sperry II** who also will be general manager.

I. F. Fausek was elected president, **Modern Engineering Co.**, St. Louis. He succeeds **A. J. Fausek**, now chairman of the board. **A. V. Fausek** was made vice president-sales; **Willis L. Reedy**, vice president-production; and **I. F. Fausek Jr.**, secretary.

William Tucker was elected executive vice president and a director of **F. C. Russell Co.**, Cleveland. He is responsible for the general management of the company.

GORDON B. ANDERSON

GEORGE T. DEXTER

. . . Puget Sound Sheet Metal Works executives

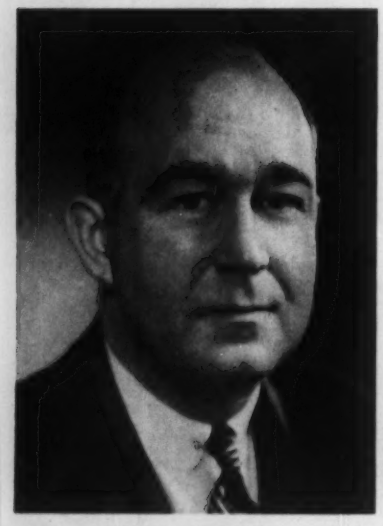
Gordon B. Anderson, vice president, was elected president of **Puget Sound Sheet Metal Works**, Seattle. He succeeds **Harry S. Bowen**, now chairman of the board. **George T. Dexter** was made executive vice president and **George K. Taylor** vice president-production.

Wesley D. Hamilton was elected executive vice president in charge of operations at **International Steel Co.**, Evansville, Ind. He was vice president-sales and assistant general manager. **Frank W. Schroeder** advanced from eastern sales manager to vice president, steel division. **Arthur M. Simpson** was promoted from general manager, revolving door division, to vice president and general manager of the division.

V. J. Heinis was named general manager of **Rheem Products Division** (Houston) of Rheem Mfg. Co. He joined Rheem in 1946 and has been general sales manager, products division.

D. I. Brown joined **Washington Steel Corp.**, Washington, Pa., as assistant to the president.

George J. Heideman was elected treasurer and **Charles R. Van Norden** secretary of **Kennametal Inc.**, Latrobe, Pa. They succeed the

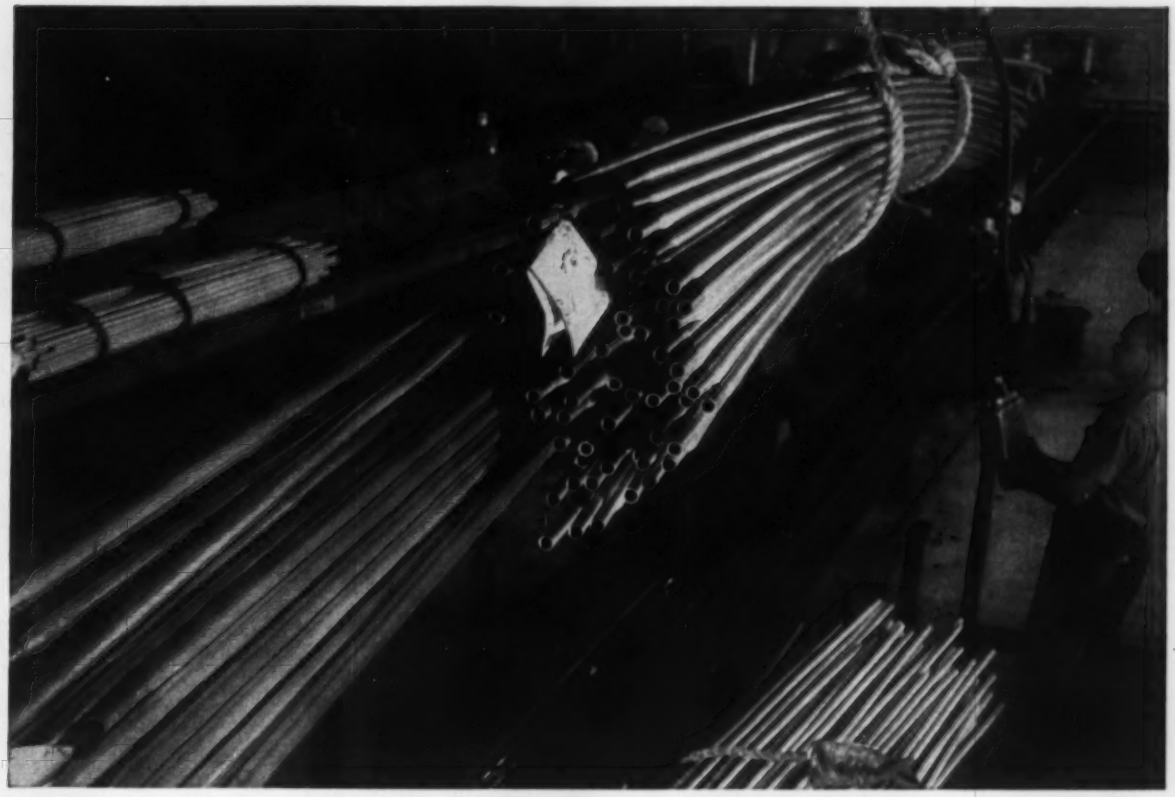


WESLEY D. HAMILTON

FRANK W. SCHROEDER

ARTHUR M. SIMPSON

. . . executive positions at International Steel Co.



Good News about Titanium!

SUPERIOR TITANIUM TUBING NOW AVAILABLE IN A WIDE RANGE OF SIZES, FORMS, TEMPERS

The big news about titanium these days is not its high strength to weight ratio; its formability; its corrosion, heat and electrical resistance. Engineers know all this. What they want to know is *when*. The answer is *right now*, as far as tubing is concerned.

Although everything is special as far as the production of titanium tubing is concerned—more grinding operations are required, special lubricants have to be employed, drawing schedules have to be much lighter, annealing must be done in special furnaces, special pickling solutions are demanded—the end result is always a standard tubing obtainable from Superior distributors coast to coast. Sizes range in O.D. from .012″ up to 1.50″, in wall thickness from .002″ to .187″, and in lengths up to 24 feet. Tempers—fully annealed, half hard and full hard. Forms—Seamless and Weldrawn®.

Applications are increasing rapidly. They now range from use in the atomic energy programs—to low stress aircraft structural parts—to pneumatic, hydraulic, refrigeration lines—to processing lines in the chemical industry.

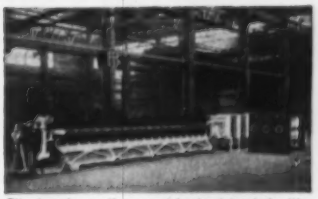
Write now for your free copy of Bulletin 43—it contains complete technical and ordering information—and for the name of the Superior distributor nearest you. SUPERIOR TUBE COMPANY, 2005 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.

Round and shaped tubing available in Carbon, Alloy and Stainless Steels; Nickel and Nickel Alloys; Beryllium Copper; Titanium; Zirconium

Superior Tube

The big name in small tubing

All analyses .010″ to ⅛″ O.D. Certain analyses in light walls up to 2½″ O.D.



Titanium is reactive, must be heat treated without atmospheric contamination. This vacuum annealing furnace handles material 24 feet in length, operates at temperatures up to 1850°F, is automatically controlled.

All you need to know about titanium tubing is contained in this newly revised 8-page booklet—Bulletin 43. Contains processing information, properties, advantages and end uses, describes sizes, forms and tempers available.

ALLEN W. SALZMAN
. . . chief engineer at Waukesha Tool

GEORGE BENNETT
. . . president of Borroughs Mfg.

JOHN W. BUSKIE
. . . Tenn-Tex Alloy & Chemical v. p.

late **George T. Kearns** who served in both capacities.

Allen W. Salzman joined **Waukesha Tool Co.**, Waukesha, Wis., as chief engineer. He also will head up the firm's new thrust bearing division. He has been process and development engineer with Racine Hydraulics & Machinery Inc.

At the Cleveland steel service plant of **Joseph T. Ryerson & Son Inc.**, **Homer E. Rieker** was made manager of sales, a new post. He is succeeded as manager of sales-tubular products and cold finished steel bars by **William B. Hawk.**

Francis T. Thorley was made assistant sales manager of **Hy-Pro Tool Co.**, New Bedford, Mass.

Fred C. Lange succeeds **J. A. Teach**, retired, as manager of Chicago Works, fabricated steel construction, **Bethlehem Steel Co.**

Borroughs Mfg. Co., Kalamazoo, Mich., subsidiary of American Metal Products Co., elected **George Bennett** president and **Tracy Call** treasurer-secretary. Mr. Bennett was general manager. Mr. Call was controller.

Richard N. Golbach, director of sales for **Central Scientific Co.**, Chicago, was elected a vice president.

LeRoy Staunton was made sales manager for Uskon radiant heating panels of **United States Rubber Co.**, New York.

L. J. Cross was made a purchasing agent of **Wheeling Steel Corp.**, Wheeling, W. Va.

Dr. Alvin M. Weinberg was made director of **Oak Ridge National Laboratory**, Union Carbide Nuclear Co., a division of Union Carbide & Carbon Corp., New York.

John W. Buskie was elected vice president of **Tenn-Tex Alloy & Chemical Corp.**, Chattanooga, Tenn. He has been a consultant with Tennessee Products & Chemical Corp. and with Tenn-Tex Alloy, both divisions of Merritt-Chapman & Scott Corp., and continues in that position with the former firm. From 1949 to 1954 Mr. Buskie was general manager of metallurgy and development for Ohio Ferro Alloys Corp.

Ivan E. Howard was made Cleveland district sales manager for **Lamson Mobilift Corp.**

Bertrand Y. Auger was made technical director, reinforced plastics division, **Minnesota Mining & Mfg. Co.**, St. Paul.

Dr. Albin N. Benson was made technical director of **Bridge Tool & Die Works Inc.**, Philadelphia.

OBITUARIES . . .

Irving T. Bennett, 55, chairman and chief executive officer of **General Cable Corp.**, New York, died Oct. 3.

Lincoln Kilbourne, 44, general manager of sales, industrial division, **Jeffrey Mfg. Co.**, Columbus, O., died Oct. 5.

Robert P. Tyler, vice president-sales, **Macwhyte Co.**, Kenosha, Wis. died Oct. 2.

Paul R. Schieve Jr., 49, president, **Buffalo Structural Steel Corp.**, Buffalo, died Sept. 29.

Julius Karch, 74, owner, **Karch Pipe Co.**, Rochester, N. Y., died Oct. 2.

George Skakel Sr., chairman of the board of **Great Lakes Carbon Corp.**, New York, died Oct. 3.

William V. Knoll, 66, a vice president of **Ross Midwest Fulton Corp.**, at Dayton, O., died on Sept. 25.

W. Grant King, founder of **King Sewing Machine Co.**, Buffalo, died Sept. 16.

Ernest E. Gore, plant manager, **Lincoln Bearing Co.**, Cleveland, died Oct. 3.

Thomas S. Smith, 45, a vice president, **Smith Engineering Works**, Milwaukee, died Sept. 22 of a heart attack.

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Only a seasoned hunter with the right equipment can stand up to a charging rhino. And, likewise, only a special steel like JALLOY can withstand severe impact and abrasion . . . day after day. In comparison with mild steels as well as other abrasion-resistant steels, JALLOY gives outstanding results when heat-treated to your specifications.

This modern heat-treated plate brings savings in steel costs, maintenance, and repair, and also is easily welded. JALLOY is available in three grades, each of which is designed for specific applications.

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Complete data concerning CHEMICAL COMPOSITION . . . HEAT TREATMENT . . . WELDABILITY . . . PHYSICAL PROPERTIES . . . will be mailed to you promptly. Write today.

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Jalloy Plates outlast other steels by margins of 4 to 1

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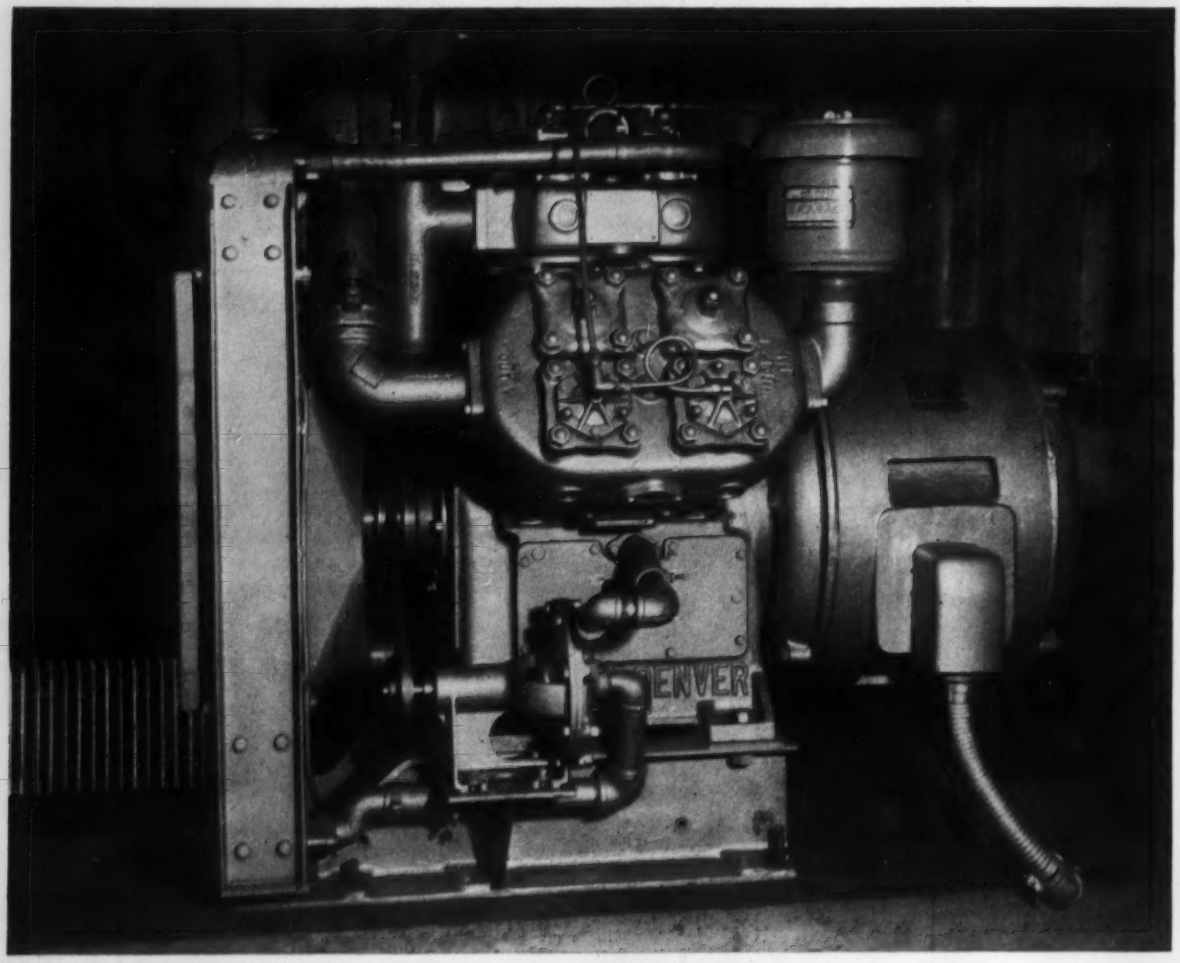
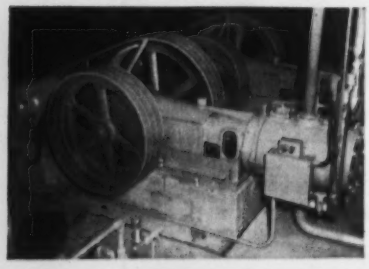


You save five important ways with the Gardner-Denver WB Compressor



Put these Gardner-Denver RX Compressors on 24-hour service—and forget about air stoppage. Send for bulletin HAC-40.

1. Seven compact sizes save floor space.
2. Ready to hook up and go—inexpensive foundation requirements.
3. Combination radiator-intercooler saves cooling water where it is hard to come by.
4. High efficiency design saves power costs.
5. And a WB seldom requires more than routine maintenance.

Send for bulletin WB-10

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GARDNER-DENVER Since 1859 — KELLER TOOLS

Timken To Expand

Will spend $7 million to up capacities of its Steel & Tube, Rock Bit and Bearing divisions

TIMKEN ROLLER BEARING Co., Canton, O., has launched a multimillion-dollar expansion and modernization program. A $7-million budget for 1956 has been established for the purchase of equipment and for increasing the capacities of its Steel & Tube, Rock Bit and Bearing divisions.

Improvements will include: Enlargement and modernization of the Gambrinus, O., tube mill; installation of two annealing furnaces; construction of an oxygen plant; construction of a central warehouse at the Bucyrus, O., plant; and purchase of automatic screw machines and grinding equipment for all plants.

More Bearings — An additional $5-million budget has been established for the purchase of facilities to produce railroad bearings. It is unlikely that the entire sum will be spent in 1956. Engineering plans call for facilities to produce 20,000 additional car sets of railroad bearings per year. As orders from the railway industry increase, funds will be appropriated from the $5-million budget to purchase additional equipment.

Equipment will be geared to turn out the newly designed journal bearings that railroads are buying in unprecedented volume, company officials say.

Chrysler To Build Press Plant

Chrysler Corp. will build a multimillion-dollar metal stamping and fabricating plant at Macedonia, O. Covering 1.5 million sq ft, it will be operated by the Automotive Body Division. The plant will house 28 lines of huge stamping presses—about 260 machines, the largest being 1800-ton presses. Some 45,000 tons of steel will be consumed each month.

Blaw-Knox To Buy Continental

Blaw-Knox Co., Pittsburgh, will purchase Continental Foundry & Machine Co., subject to stockholders' approval. Continental operates plants at Wheeling, W. Va.; East Chicago, Ind.; Coraopolis and Erie, Pa. The company's principal business is rolling mill machinery. The Copes-Vulcan Division at Erie produces regulators, soot cleaners and special power plant equipment.

Uranium Output Rising Steadily on Colorado Plateau

This uranium processing mill at Uravan, Colo., is undergoing another large expansion in capacity. The project is expected to be completed early in the fall of 1956, says Kenneth Rush, president of Union Carbide & Carbon Corp.'s newly formed atomic energy division, Union Carbide Nuclear Co. Engineering work is well under way and construction contracts are being placed currently

Offers Small Alloy Castings

Contract production of small shell-molded castings of cobalt-base alloys and other nonferrous and ferrous alloys is now offered by Crobalt Inc., Ann Arbor, Mich. The firm is equipped to make shell molds up to 14 x 18 in. pattern size. It has pattern-making facilities, electric arc furnaces and cleaning equipment. Present capacity is 1500 lb per shift.

Fabricator Moves to Baltimore

National Wire Products Corp., formerly U. S. Metals Corp. of San Juan, Puerto Rico, moved its plant facilities to Fischers road and Pennsylvania Railroad, Baltimore 22, Md. The firm makes welded wire concrete reinforcement mesh and other wire products. Officers of the firm are: H. C. Youngen, president; Ray C. Faust, secretary and treasurer.

Cruse-Kemper, Wheeler Merge

Cruse-Kemper Co., Ambler, Pa., steel plate fabricator, has been consolidated with C. H. Wheeler Mfg. Co., Philadelphia. Cruse-Kemper, operating as a division of Wheeler, will continue to furnish welded steel parts for condensers, pumps, deck machinery and auxiliary equipment to its parent firm. The division also will continue its field erection, gas holder inspection and repair business. F. G. Deker is in charge of the Cruse-Kemper Division.

Enameling Firm Changes Hands

Robert H. Stegeman of Cincinnati purchased Barrows Porcelain Enamel Co., that city, producer of porcelain enamel sign faces and letters, architectural components and industrial products. Mr. Stegeman formerly was associated with the Dayton, Ky., firm of Wadsworth Watch Case Co.

Business Machine Firm Expands

Addressograph - Multigraph Corp., maker of business machines, is adding 44 per cent to existing office and plant facilities at 1200

(*Please turn to page* 104)

AUSTIN-WESTERN HYDRAULIC CRANE

Most Versatile Tool

at Columbia Steel

Useful Inside and Outside...Lifts, Carries, and Spots Any Material Anywhere

Says Robert W. Williamson, Plant Engineer

Columbia Steel & Shafting Co., Carnegie, Pa.

"This hydraulic unit—has met every requirement we have made of it."

"Besides that, the over-all savings is impressive."

"Our Hydraulic Crane has proved to be so powerful, speedy and maneuverable that it has replaced a smaller mobile crane and its operator, as well as a crawler tractor requiring another operator."

"We save the difference in the cost between owning and operating one versatile tool in place of two less useful ones."

RETURNS 100% A YEAR ON INVESTMENT

"... We figure our A-W unit directly saves us 100% a year on our investment—plus helping to reduce maintenance cost and downtime."

HANDLES NUMEROUS JOBS

"This hydraulic unit frequently supplements the Shipping Department's facilities and loads box cars and trucks with finished steel."

"When an overhead crane is down for repairs, our Austin-Western unit unloads four-foot diameter coils of wire and arranges them in racks in the warehouse."

"When trucks happen to be immobile with tire and battery trouble, we pull them in or assist in quick tire change."

"When our 45-ton diesel is tied up elsewhere, we even pull loaded gondola and box cars on our switch tracks."

"The crane takes all kinds of conditions in stride."

"... have really required no repairs in 10 months of pretty grueling service."

AUSTIN-WESTERN COMPANY

Construction Equipment Division · Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

Power Graders • Motor Sweepers

Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN COMPANY

623 Farnsworth Avenue, Aurora, Illinois

Please send complete Gould Certified Report N. 5507.

Name .....

Title .....

Company .....

Street .....

City ..... Zone ..... State .....

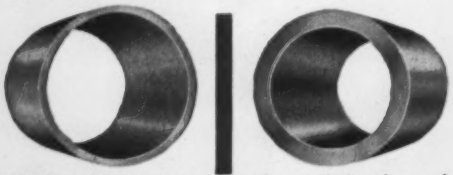
looking for the right tube in

WELDED STAINLESS?

Check Standard's Complete Range of tube and pipe sizes!

Whether it's for a pressure, mechanical, sanitary or ornamental use — Standard offers you a convenient "one source" answer to your welded Stainless Steel Tubing need.

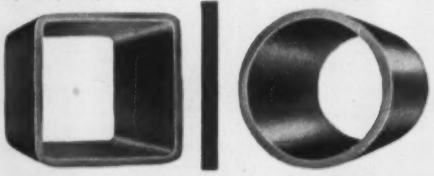
TUBE SIZES: ¼" to 4" OD .025 to .148



PIPE SIZES: ⅛" to 2" IPS Schedule 40

TYPES: 430, 302, 304, 309, 316, 321, 347; and others including low-carbon grades.

SHAPES: Squares, Rectangles and Special Shapes



PIPE SIZES: ⅛" to 4" IPS Schedules 5 & 10

Send for Stainless Folder! Our engineers will gladly assist you in your selection of the tube best suited to your needs! Write today!

Specify Standard for

- WELDED STAINLESS TUBING AND PIPE
- WELDED CARBON STEEL MECHANICAL TUBING
- BOILER AND HEAT EXCHANGER TUBING
- EXCLUSIVE "RIGIDIZED" PATTERNS

(*Concluded from page* 101)

Babbitt Road, Euclid, O. (Cleveland). The program provides for expanded manufacturing facilities and greatly enlarged research and engineering operations.

Buys Antichecking Iron Line

As an adjunct to its wood preserving business, Koppers Co. Inc., Pittsburgh, purchased production facilities for manufacturing antichecking irons from Brainard Steel Division, Sharon Steel Corp., Sharon, Pa. Machinery for making the "C" or "S"-shaped pieces of steel which are driven into the ends of railroad ties and other large timbers to retard splitting has been moved from the Brainard plant at Warren, O., to the Koppers plant at Orrville, O.

Rheem Builds Plant Addition

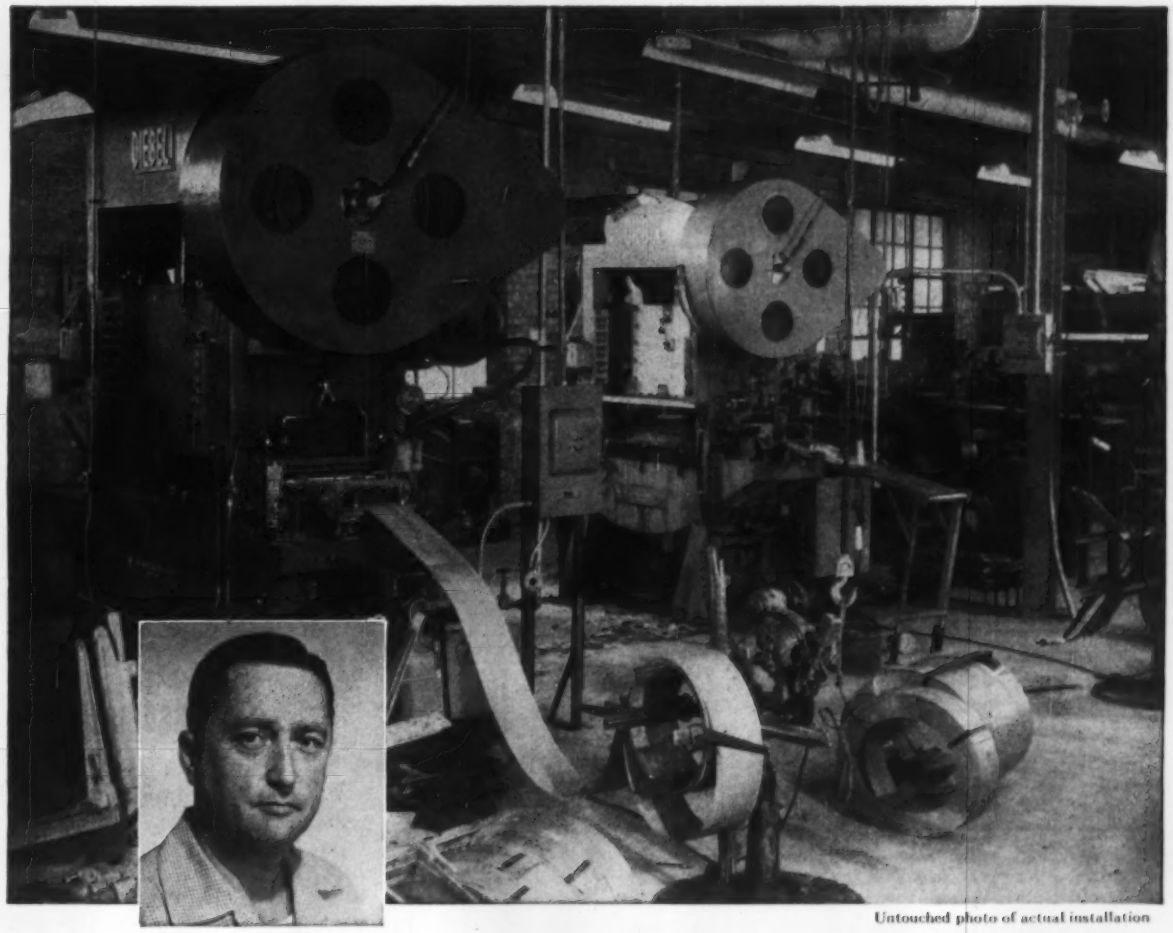
Rheem Mfg. Co., Chicago, is adding 64,000 sq ft of floor space to its Chicago plant. The expansion was made necessary by growth in the firm's business (manufacturing steel drums, warm air furnaces and central air conditioning units for homes) and the transfer of Rheem's clothes dryer activities to Chicago from the West Coast. Cost of the new structure will be about $500,000.

New Jersey Wire Mill Enlarged

Triangle Conduit & Cable Co. Inc. is adding 60,000 sq ft of warehouse and manufacturing space to its wire mill at New Brunswick, N. J.

Ferro Subsidiaries Merge

Louthan Mfg. Co., East Liverpool, O., merged with Ferro Powdered Metals Inc., Salem, Ind. Ferro Corp., Cleveland, is the parent company of both wholly owned subsidiaries. Louthan produces porcelain refractory and electrical insulations and various products for the ceramic industry. Ferro Powdered Metals supplies parts to the appliance, automotive and hardware industries. The merged company will carry on both operations under the name of Louthan Mfg. Co., with the Salem operation to be known as



Untouched photo of actual installation

Sola Electric Gets Extra Day's Work Every Week with DIEBEL AUTOMATIC PRESS!

You need simply observe Sola Electric Company's progressive press room re-equipment program to see why they are a leading manufacturer of constant voltage transformers and fluorescent ballasts! Doing it faster, better, more economically . . . doing it automatically is the by-word at Sola!

As Max Haussler, in charge of tool making and metal working operations, explains it, "Our first installation of the program was a Diebel 60 Ton Automatic Press for stamping laminations. We soon discovered that the Diebel Press was giving us a 30% reduction in labor costs of producing laminations."

"In addition, we increased production between grinds by 30% and *die chipping was virtually eliminated!* Then too, down time and set-up time has been cut in half and maintenance costs are next to nothing! As our records show, we are getting an extra day's production every week over the former operation . . . thanks to the Diebel Press!"

In these times, can *YOU* afford anything short of a fully automatic press room? Diebel Presses are compact, self-contained, fully automatic *factories* in themselves, delivered completely equipped and ready to work for you . . . even the die if you choose!

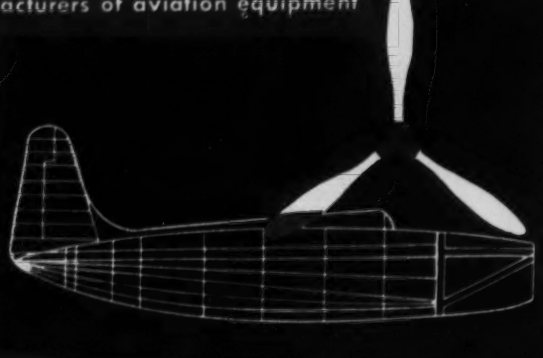
Remember, the men at Diebel are automatic press specialists, ready and willing to help you with your stamping problems. A Press Plans Board and Engineering Staff are at your disposal. Next time, consult with Diebel first . . . and get *automatic* profits!

DIEBEL HI-PRODUCTION AUTOMATIC PRESSES

A COMPLETE LINE FROM 5 TO 100 TONS

BUILT BY DI MACHINE CORPORATION 2710 WEST IRVING PARK, CHICAGO 18

a special message for
manufacturers of aviation equipment



need a finish for
light metal parts?

specify
IRIDITE

Here's the finish that combines corrosion resistance and paint adherence with extreme ease of application. It can be welded or soldered with no difficulty and presents no problem in "patching" scratches, marks or scraped sections. Here's what you can do with Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified phone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

Ferro Powdered Metals Division. The merger will bring together research and development talent of both operations for exploratory work in the cermet field. H. T. Marks, executive vice president of Ferro Corp., is president of Louthan Mfg Co.; C. W. Gerster, executive vice president; G. E. Weber, secretary-treasurer; J. F. Helsel, vice president in charge of Ferro Powdered Metals Division.

REPRESENTATIVES

Schroeder Bros., Pittsburgh, has been appointed representatives for **Rivett Lathe & Grinder Inc.**, Boston, maker of valves, cylinders and hydraulic power units, and for **Gerotor May Corp.**, Baltimore, manufacturer of hydraulic pumps, motors and transmissions.

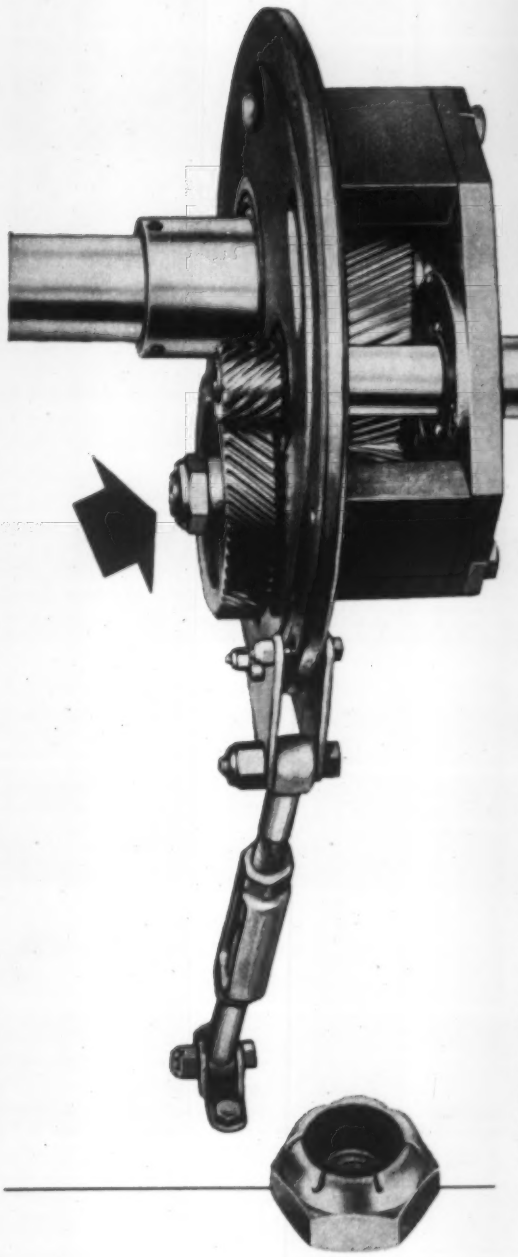
ASSOCIATIONS

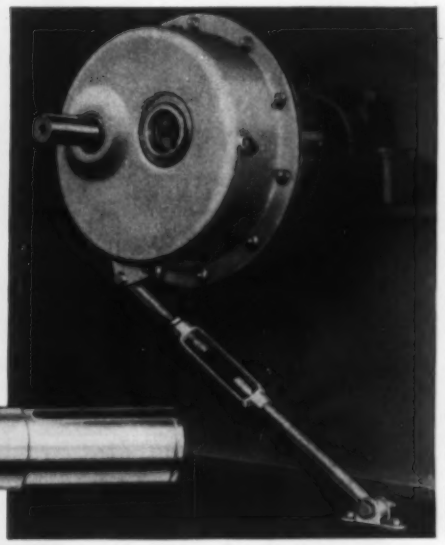
Association of Iron & Steel Engineers, Pittsburgh, elected the following officers for 1956: President, W. H. Collison, Great Lakes Steel Corp., Ecorse, Mich.; first vice president, J. D. O'Roark, Weirton Steel Co., Weirton, W. Va.; secretary, S. C. Read, Jones & Laughlin Steel Corp., Pittsburgh; treasurer, Emil Kern, Allegheny Ludlum Steel Corp., Brackenridge, Pa.

Drop Forging Association, Cleveland, appointed Waldemar Naujoks to its staff to head the association's statistical program. Mr. Naujoks was vice president and general manager of Globe Forge Inc., Syracuse, N. Y.

Robert T. Scott has been named public relations director for **Material Handling Institute Inc.**, Pittsburgh. L. W. Shea is secretary.

Dr. David W. Levinson, a specialist in physical metallurgy, has been appointed supervisor of nonferrous metallurgy research in the metals research department at **Armour Research Foundation**, Illinois Institute of Technology, Chicago. A major share of his group's





The Falk Corp., of Milwaukee, also uses Elastic Stop nuts in the tie rod assembly . . . and on the gear housing to maintain tight cover fit.

Elastic Stop® nuts solve critical gear adjustment problem in new speed-reducing unit!

In its rugged new Shaft-Mounted Drive, The Falk Corporation uses a self-locking Elastic Stop nut to secure the high-speed gear to the intermediate shaft, as shown in the illustration on the left.

The precision-made Elastic Stop nut stays firmly in place and the close seat-squareness tolerances maintain the exact original gear adjustment withstanding severe vibration caused by shock loads transmitted through the gears. Costs are cut because drilled bolt holes and cotter pins are eliminated.

Here's how this Elastic Stop nut works: The familiar red collar of the Elastic Stop nut is deliberately undersized in relation to the shaft (or bolt) diameter. It grips the shaft with a perfect fit, enforces a continuing self-locking pressure against the metal threads, and holds the nut securely in place at the desired point on the shaft. This same tight-fitting locking collar also provides a seal that prevents oil from seeping along the bolt threads, wherever oil seepage is a problem. And because the bolt threads are protected against moisture from without, the nuts cannot become "frozen" to the bolt by corrosion. The elastic recovery of the red collar permits extended re-use of Elastic Stop nuts.

Mail the coupon for information on how Elastic Stop nuts can solve your specific fastening problem.

ELASTIC STOP NUT CORPORATION OF AMERICA

ESNA® TRADE MARK

ROLLPIN TRADEMARK

Elastic Stop Nut Corporation of America
Dept. N67-1060, 2330 Vauxhall Road, Union, N. J.
Please send the following free fastening information:

☐ ELASTIC STOP nut bulletin

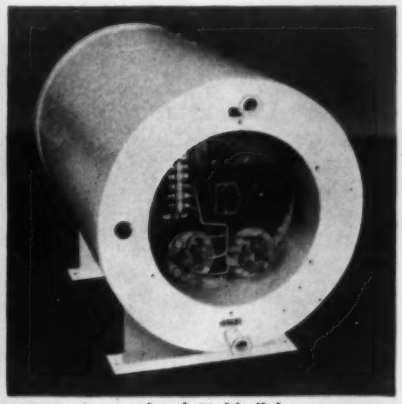
☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name _____ Title _____

Firm _____

Street _____

City _____ Zone _____ State _____



ABOVE: A completed Hubbell booster water heater.

LEFT: Welding the head on a 10-gallon Everdur booster heater tank using Anaconda ⅛" Everdur-1010 Rod. All spuds, flanges and fittings are Everdur.

Everdur tanks...welded with Everdur-1010 rod make long-life booster water heaters

Water at 180F may be highly corrosive. Yet 180-degree rinse water is required by many sanitary codes for sterilization in commercial dishwashing machines.

The Electric Water Heater Co. of Stratford, Conn., makers of Hubbell water heaters, and one of the pioneers in the electric water heater business, builds 10-gallon and 20-gallon models for just this service. Experts in the design and fabrication of water heating equipment, Electric Water Heater Company is also a pioneer in the use of Everdur* for its tanks.

The tinned Everdur tanks for booster heaters are welded by the carbon-arc method, using Everdur-1010 Welding Rod. In this tough service in restaurants, hotels, schools and institutions, the tanks have performed dependably and are considered to have a long life expectancy.

AnacondA Welding Rods for many types of welding are available from distributors throughout the United States and Canada. See your distributor for help in selecting the exact rod to help you speed assembly and cut production costs. Or write for Publication B-13. Address The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

*Reg. U. S. Pat. Off. 55135

braze or weld with confidence

ANACONDA®
welding rods

You can select from 9 ANACONDA welding rods

NAME OF WELDING ROD	APPROX. MELTING POINT, DEGREES Cent.	Fahr.	USUAL APPLICATIONS
*ANACONDA COPPER-372 (Patent No. 2,220,464)	1075	1967	Inert-gas arc and oxyacetylene welding of copper.
TOBIN BRONZE-481	885	1625	Oxyacetylene braze welding of steel, cast iron, and copper alloys.
ANACONDA-997 (Low-Fuming) BRONZE	870	1598	A low-fuming manganese bronze for use where the highest weld metal properties are required. Oxyacetylene braze welding of steel, cast iron, and copper alloys, and for bearing surfaces.
NICKEL SILVER-828	930	1706	Oxyacetylene braze welding of cast iron and steel for strong, color-matching welds and bearing surfaces.
CUPRO NICKEL-826 (Patent No. 2,012,450)	1225	2237	Oxyacetylene welding of Cupro Nickel and surfacing of steel.
*EVERDUR-1010	1019	1866	Inert-gas arc, carbon-arc and oxyacetylene welding of Everdur, copper and copper alloys. Also for welding to, and for surfacing steel.
*PHOSPHOR BRONZE-351	1050	1922	Inert-gas and carbon-arc welding of phosphor bronze and copper, and for surfacing steel.
*PHOSPHOR BRONZE-354	1000	1832	Inert-gas and carbon-arc surfacing of steel, and for welding phosphor bronze.
**AMBRALOY-928	1040	1904	Inert-gas consumable-electrode welding of aluminum bronze and for surfacing steel.

*These alloys are also used in the inert-gas consumable-electrode process. Spooled rods are marketed by the manufacturers of the welding equipment.

**Supplied only on spools by the manufacturers of the welding equipment.

work involves the newer metals, such as titanium, zirconium, uranium and vanadium.

Society of Industrial Designers, New York, changed its name to American Society of Industrial Designers. Peter Muller-Munk is president.

ANNIVERSARIES

American Cast Iron Pipe Co., Birmingham, Ala., is observing its 50th anniversary. The firm has grown to become one of the major cast iron pipe producers in the world. It also has facilities for the production of centrifugally spun steel tubes, as well as industrial alloy iron castings.

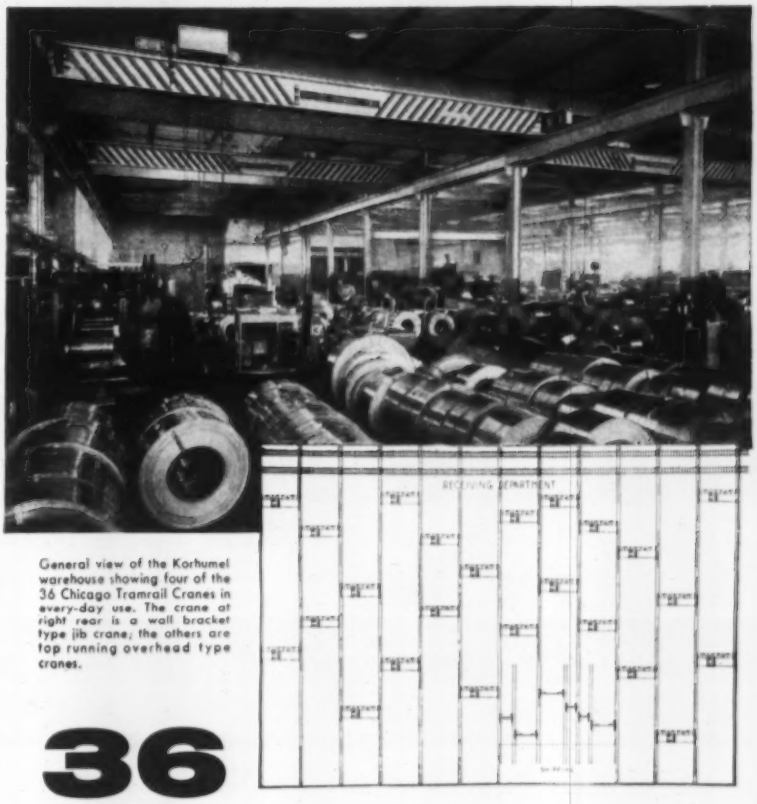
Mexico Refractories Co., Mexico, Mo., is celebrating the 25th anniversary of its founding.

NEW ADDRESSES

Fairchild Engine & Airplane Corp.'s American Helicopter Division consolidated its operations at 118 E. 16th St., Costa Mesa, Calif. The division makes resistance-welded, temperature - resistant, structural sandwich components; instrumentation and automatic control equipment and systems; fiberglass-reinforced plastics; microwave components; resistance-welded, stainless steel heat exchangers.

Vascoloy-Ramet Corp., Waukegan, Ill., moved its branch office to 4346 Germantown Ave., Philadelphia 40, Pa. E. J. Wunderlich is in charge of the office. Vascoloy-Ramet products, including cemented-carbide cutting tools, toolholders and carbide inserts, are distributed in the greater Philadelphia area by Industrial Supplies Co. and Precision Tool & Engineering Corp.

Torrington Co., Torrington, Conn., moved its New York offices to 111 Eighth avenue at 15th street. C. W. Dietrich Jr. is district engineer in charge of bearing sales; C. T. Spalding, office manager.



General view of the Korhumel warehouse showing four of the 36 Chicago Tramrail Cranes in every-day use. The crane at right rear is a wall bracket type jib crane; the others are top running overhead type cranes.

36

CHICAGO TRAMRAIL Cranes at Korhumel Steel & Aluminum Co. Warehouse, Evanston, Ill.

Korhumel came to Chicago Tramrail for assistance in planning a complete handling system for their bulky, unwieldy steel and aluminum coils, sheets, bar stock, which would provide a smooth, economical flow of materials from receiving at one end to shipping at the other.

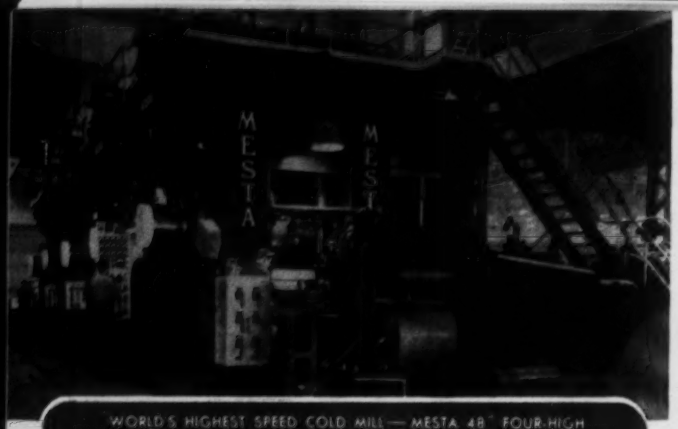
The Korhumel warehouse of over 160,000 sq. ft. consists of 12 bays each 40 ft. x 325 ft. and materials including coils weighing up to 24,000 lbs. must be transported to and from machines and ovens for slitting, shearing and annealing to customer specifications. Complete coverage of the entire area was required and this is exactly what Chicago Tramrail engineers provided. Types and sizes were selected to meet specific requirements and locations. Each bay has two or three top running cranes. All cranes are 5-ton and 10-ton capacity controlled from the floor by pendant push-buttons for independent individual operation, and the complete installation consists of 36 cranes.

Material flows smoothly and efficiently at the Korhumel warehouse without waiting time for crane service, and the entire installation has proved that it meets all Korhumel requirements with ease and dispatch.

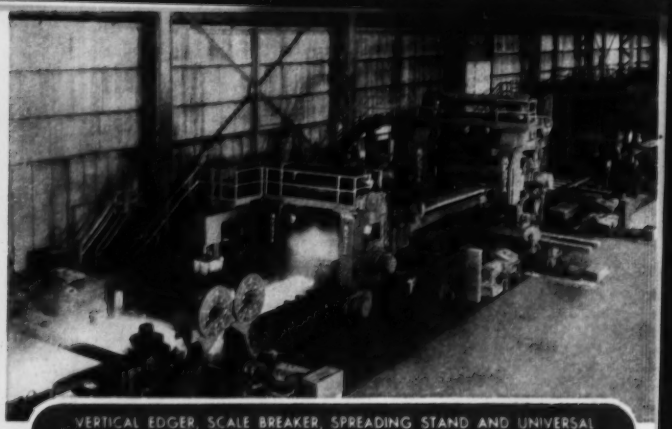
Consult Chicago Tramrail engineers on your own materials handling problem. Their technical and application knowledge enable them to be of great service. *Phone, wire or write for consultation without obligation.*

Top Running Overhead Cranes—a 20-page booklet illustrating and describing the various types, sizes, component parts and features. Contains much valuable crane information. Sent promptly upon request.

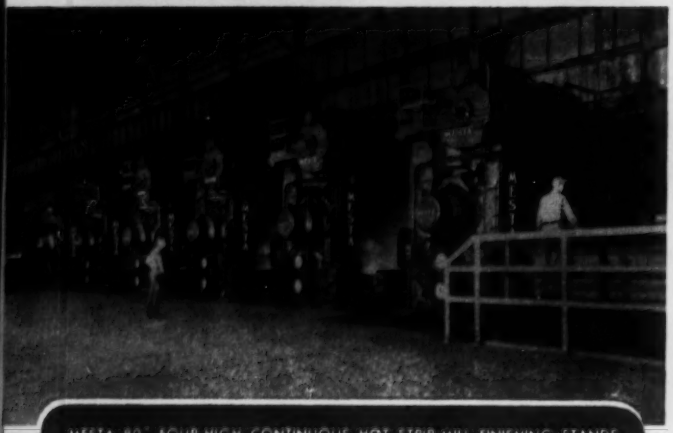
CHICAGO TRAMRAIL CORPORATION
1326 SOUTH KOSTNER AVENUE
CHICAGO 23, ILLINOIS



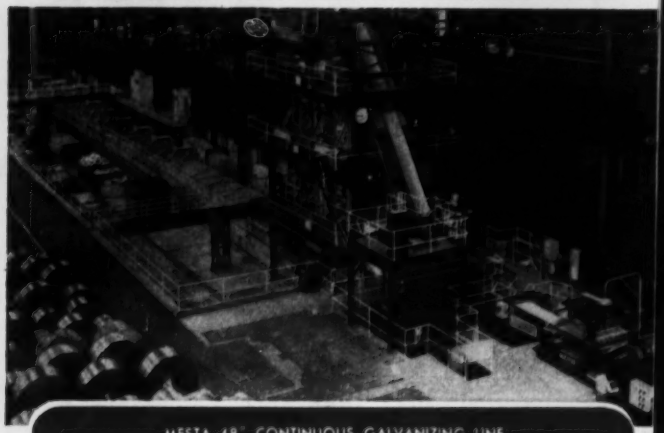
WORLD'S HIGHEST SPEED COLD MILL — MESTA 48" FOUR-HIGH FIVE-STAND HIGH-SPEED TANDEM COLD MILL



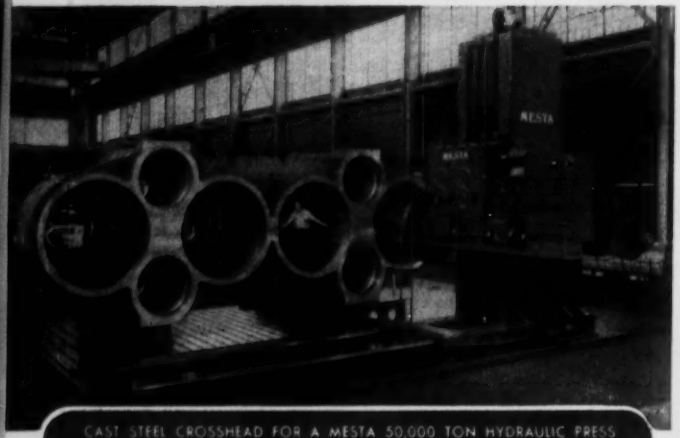
VERTICAL EDGER, SCALE BREAKER, SPREADING STAND AND UNIVERSAL STAND ON A MESTA 80" CONTINUOUS HOT STRIP MILL



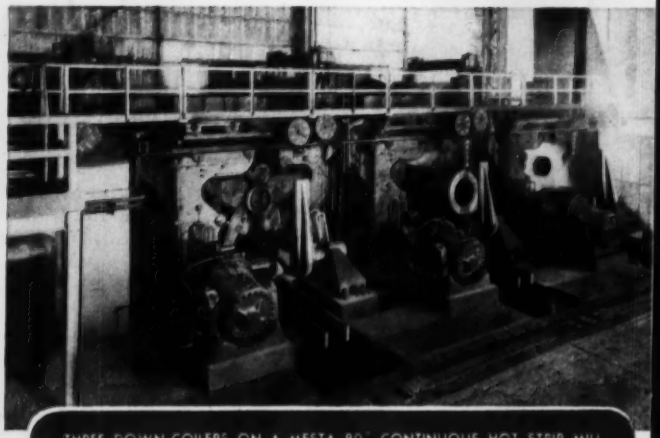
MESTA 80" FOUR-HIGH CONTINUOUS HOT STRIP MILL FINISHING STANDS



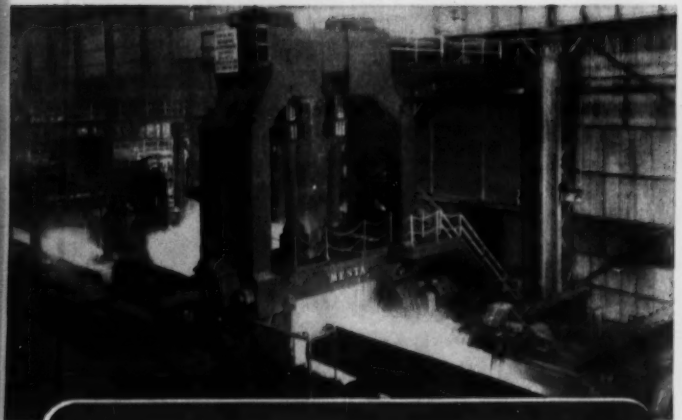
MESTA 48" CONTINUOUS GALVANIZING LINE



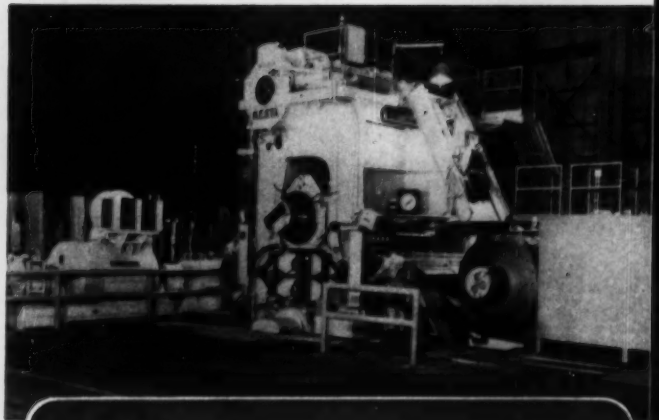
CAST STEEL CROSSHEAD FOR A MESTA 50,000 TON HYDRAULIC PRESS MACHINED ON A MESTA 18" HORIZONTAL BORING AND MILLING MACHINE



THREE DOWN-COILERS ON A MESTA 80" CONTINUOUS HOT STRIP MILL



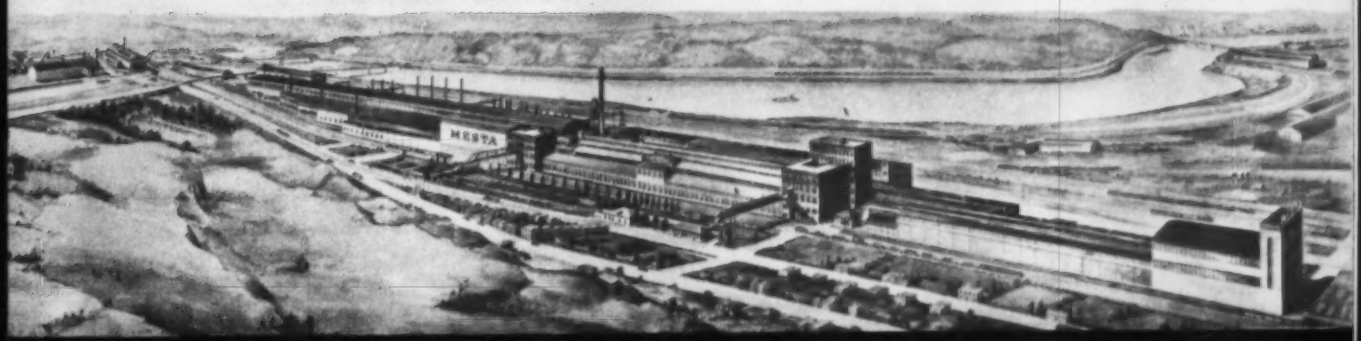
MESTA 45" x 90" UNIVERSAL REVERSING SLABBING MILL



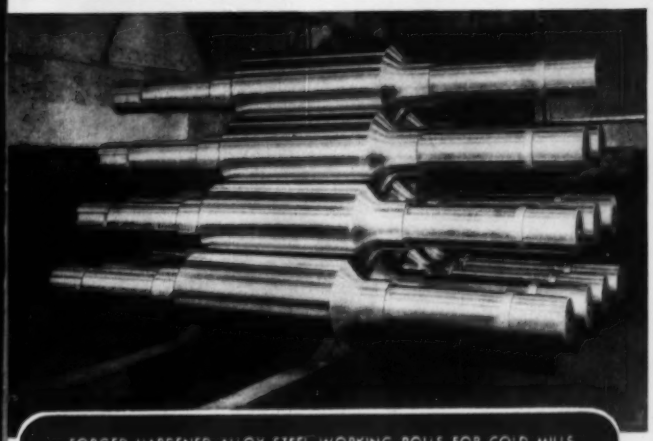
MESTA 80" FOUR-HIGH SINGLE STAND SHEET TEMPER MILL FOR COILS

designers and builders
of Complete
steel plants

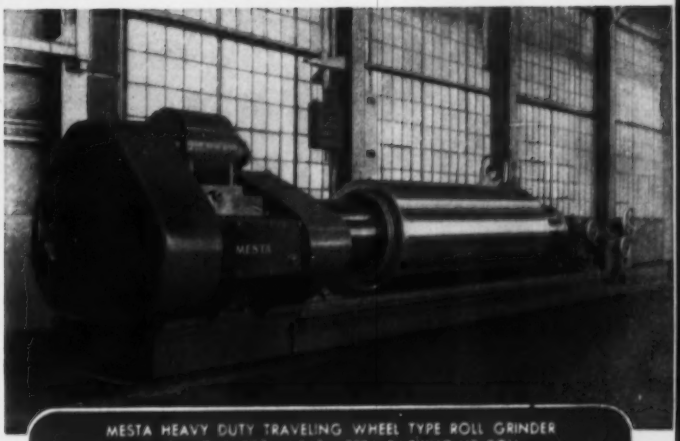
Designed and Built by MESTA



MESTA MACHINE COMPANY, PITTSBURGH, PENNSYLVANIA

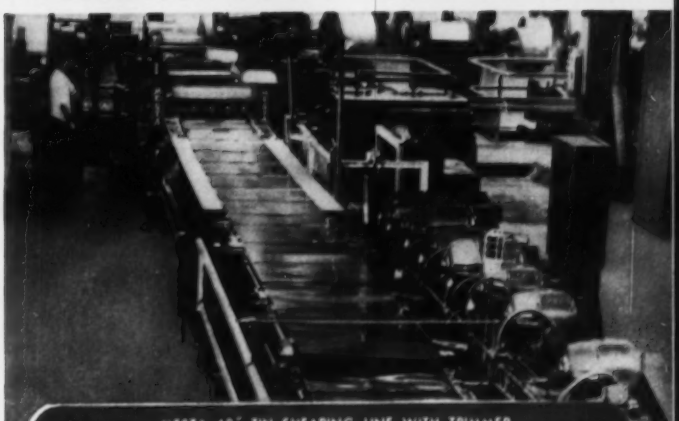


FORGED HARDENED ALLOY STEEL WORKING ROLLS FOR COLD MILLS



MESTA HEAVY DUTY TRAVELING WHEEL TYPE ROLL GRINDER FINISHING A 59" x 154" MESTA BACKING-UP ROLL

MESTA MERCHANT MILL WITH PACK ANNEALING COOLING BED AND AUXILIARY EQUIPMENT



MESTA 42" TIN SHEARING LINE WITH TRIMMER AND COMBINATION FLYING SHEAR AND LEVELLER

"General's ten factories assure <u>your</u> plants of better container service and lower costs"

Prompt and economical delivery of the containers you order is an important part of the regular service offered by General Box Company. Factories are located in or near the nation's major producing centers. The duplicate production facilities these 10 modern plants contain assure on-time delivery tuned to your needs even under unusual circumstances.

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Technical Outlook

CORED FORGINGS—Big attention getter at the Air Materiel Command's Conservation Seminar in St. Louis was an exhibit of cored aluminum forgings made by Weatherhead Co.'s Aviation Division, Antwerp, O. Intricate aluminum parts and hollow forgings show fine grain structure and high density. Results of vibration and impulse tests exceeded expectations. R. D. Hilton, director of tooling and estimating, says: "We have a development program going on titanium cored forgings, and Weatherhead is also casting its eye in the direction of carbon steels." The company says it's ready to supply specification cored forgings to industry. It's also using them in its line of fittings.

ADAPTABLE—Carboloy Department, General Electric Co., reports its vacuum melted superalloy 1570 holds promise as a sheet material. Its strength is greater than sheet now used for afterburners, tail cones and similar hot spots. The vacuum melted alloy can be inert-arc welded as easily as 321 stainless.

FILLS NEED—In many plants inundated by the New England flood, stores of finished and partly finished parts were left covered with rust and mud. Generally, salvage was possible, but it takes weeks to hand clean small parts. An answer was found in barrel tumbling. An hour or so in the tumbling abrasive, with water and cleaner, restored parts to their original condition.

WELL COVERED—General Electric is using pressure-vacuum impregnation to force varnish through transformer coils and laminations to protect every area. Blaw-Knox Co. built the installation, key to which is a driverless car, remotely controlled for six-direction motion. The car takes pallets of transformers into and out of a preheat oven, then transfers them into the pressure-vacuum impregnator. After transformers have been treated, the car is automatically retracted, then unloaded.

EXTRUDED COLD—Metallurgists at Battelle are making cold extrusions of titanium, with reductions up to 70 per cent at pressures similar to those used for steel. Smooth, ungalled surfaces are due to a special fluoride surface coating that acts as a gliding agent and lubricant retainer.

SUBSTITUTE—A New Jersey plant is set to turn out 1000 tons of synthetic mica the next 12 months. It's a start toward reducing U.S. dependence on foreign sources. Products of the synthetic material will withstand nuclear radiation and 1000°F. Crystal structure is too small for electronic tube use. A large-crystal synthetic is being developed.

BRIGHT PROSPECT—The general brightness level of industrial illumination will double in the next ten years (it doubled in the last ten), say Nela Park (GE) engineers. High frequency illumination installations will become common. GE has 4000 kw of 400-cycle installations in the planning stage. For large area lighting, its engineers say it has significant cost advantages over 60 cycles.

RESEARCH GUIDES—The American Society of Tool Engineers doesn't intend for its research to go astray. Each project has a steering committee whose function is to keep the project on the assigned track and press for usable results. Being investigated are metal cutting, boride tool materials, fog application of cutting fluids, plastic tooling, punch and die clearance and tool tip temperatures.

Metalworking Outlook—p. 67 *Market Outlook—p. 157*

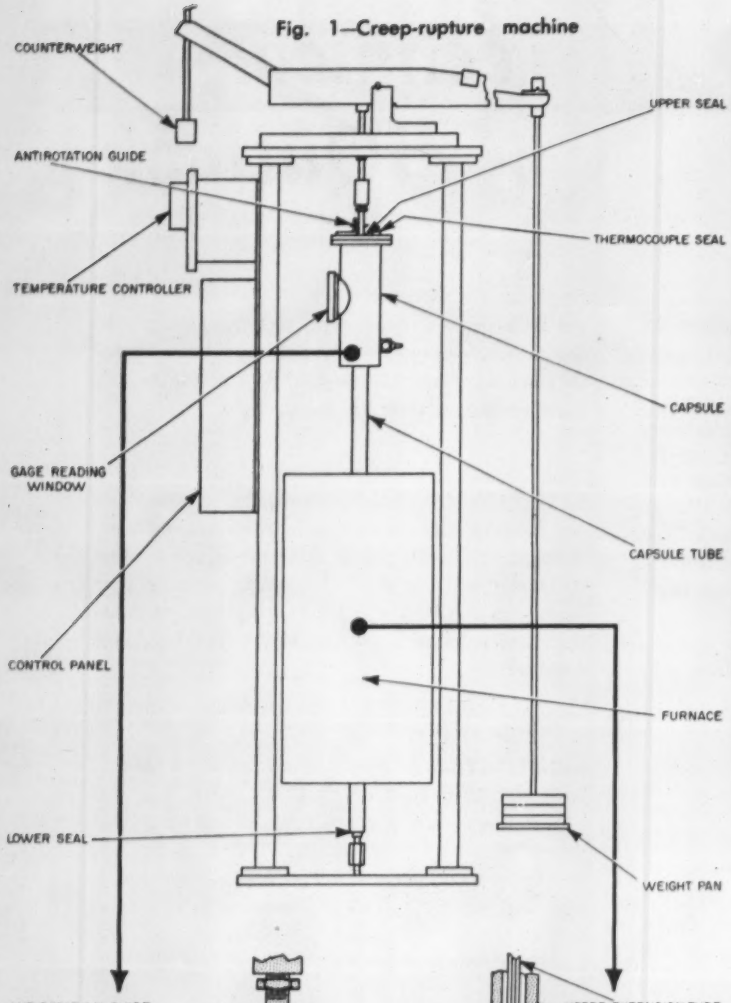

Fig. 1—Creep-rupture machine

Fig. 4—Bank of creep-rupture machines

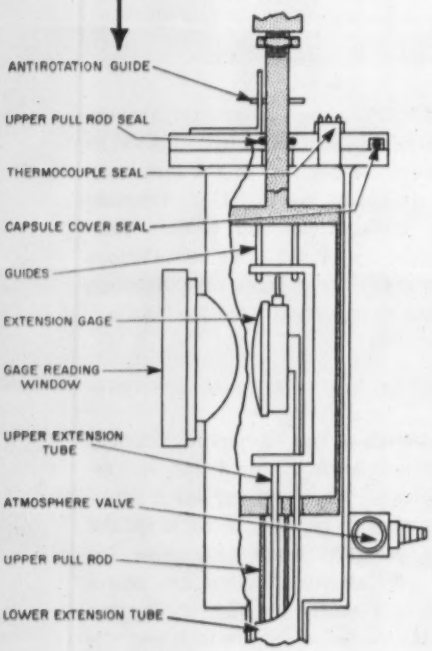

Fig. 2—Gaging mechanism

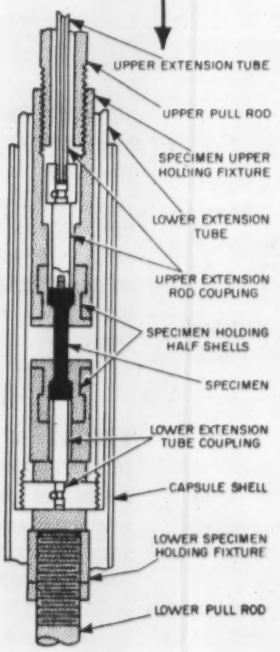

Fig. 3—Specimen coupling

How To

REFRACTORY METALS have come of age. Titanium and zirconium alloys are being used for structural parts. Alloys of molybdenum and tungsten are receiving attention for jet and rocket engines despite their relatively high density. Vanadium, tantalum, hafnium, columbium, though less abundant and more expensive, are finding engineering applications.

Important to the exploitation of refractory metals is an effective means of evaluating their mechanical properties at high temperatures. But there is a hitch: These metals are highly reactive to atmospheric gases at elevated temperatures.

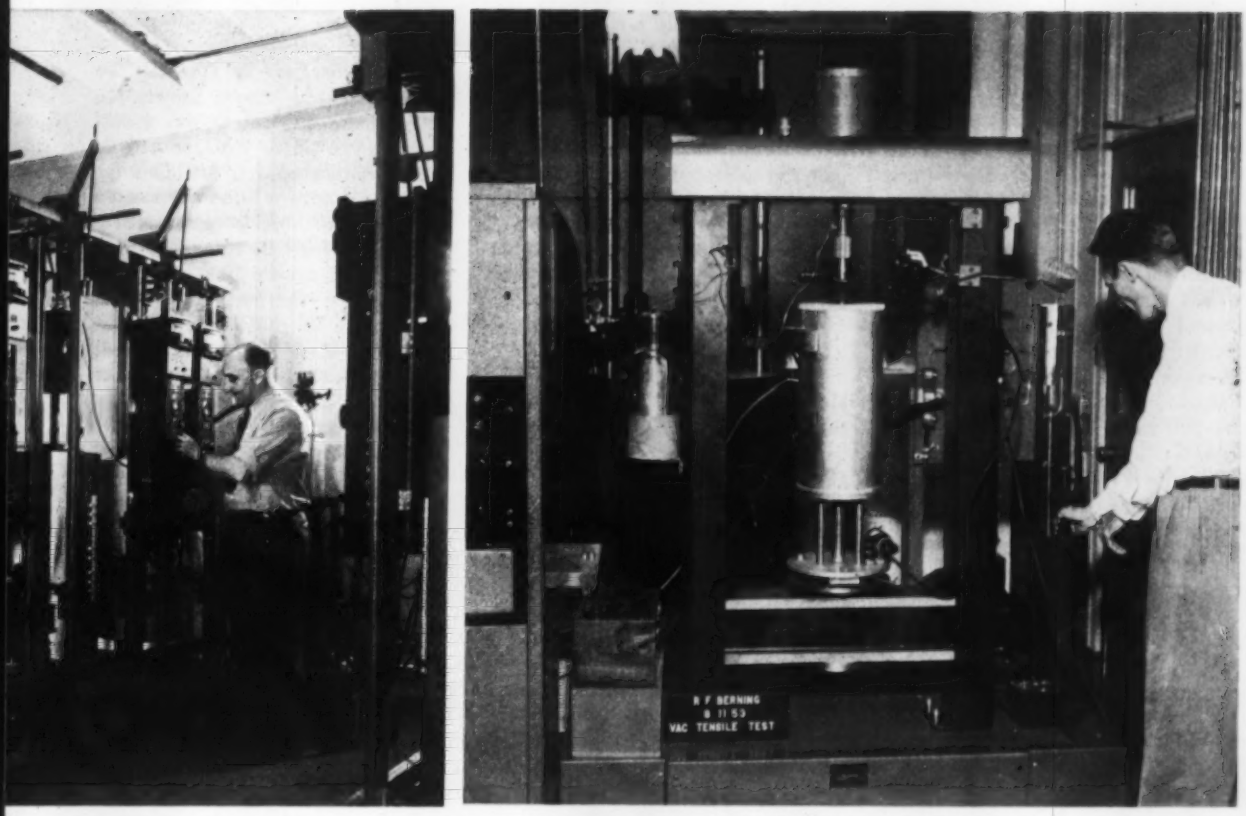

Fig. 5—Instron machine adapted for refractory metal tests

Test Refractory Metals

By J. W. PUGH
General Electric Research Laboratory
Schenectady, N. Y.

Here is how General Electric tests them:

Tensile — Two tests are made. The creep-rupture test measures the rate of deformation and the time to fracture for constant temperature and load on the sample. The short-time tensile test measures the load required to maintain a constant rate of extension.

Apparatus must have two special characteristics: 1. It must provide testing strings of sufficient strength at high temperature to transmit the tensile force to the specimen. 2. It must perform the test in an inert atmosphere which will not contaminate the specimen.

Atmospheric attack has been solved at the GE research laboratory by enclosing the entire testing string in a vacuum-tight capsule. It must be sufficiently compact to fit inside an efficient tube furnace and long enough to locate vacuum seals at points where the temperature remains relatively low.

Creep Rupture — Fig. 1 is a drawing of the creep-rupture machine, one of ten used at GE's research laboratory.

The load application mechanism is a type common to these machines. The ratio of the lever can be adjusted to 5 to 1 or 20 to 1. It must be accurately balanced, so that it exerts constant force on the pulling string which is anchored to the base plate. Loads are applied by releasing a jack under the weight pan after the correct weight has been fastened to the pan.

Capsule — The pulling string (which includes the strain measuring devices) is almost completely enclosed in a vacuum-tight capsule. Pull rods enter the capsule through O-ring seals. The upper pull rod is a tube, the top extension measuring rod being contained within it while the bottom extension tube surrounds it.

Concentric tubes link the specimen to a strain gage which the operator can read through a win-

dow. Note that the upper extension rod linkage moves away from the gage, so that at fracture the gage is not damaged (Fig. 2).

Specimen Linkage — Cylindrical button-head specimens are made with threaded ends. They are screwed to extension rod couplings, which, in turn, are pinned to the extension rods (Fig. 3).

Load is transmitted to the specimen by half shells inserted around it, pressed through a slot and turned to rest on a flange in the specimen-holding fixtures. The fixtures, in turn, are screwed to the pull rods which carry the load from the lever arm.

Specimen holding fixtures, pull rods, extension rod couplings and the half shells are made of S-590. Extension rods are made of Inconel; the capsule shell, stainless steel tubing.

Assembly—The specimen string is assembled outside, then inserted through the top of the capsule. After that, the stationary lower pull rod is sealed off by tightening it down on an internal Neoprene gasket with an external nut. When the capsule cover seal is bolted down at the top, the assembled capsule can be evacuated to about 1 micron of pressure and filled with argon.

Mounting the capsule in the machine is done by rotating the tube furnace to a 45-degree angle, inserting the capsule and rotating the loaded furnace back to the vertical (Fig. 4). When the capsule is mounted in the furnace, it can be anchored to the base plate and attached to the lever assembly.

When the load is applied, the upper pull rod moves slowly up through the lubricated O-ring seal in the cover plate. Friction at this seal is minor and is included as part of the tare weight calculation when the machine is calibrated.

Heat Control—The furnace may be operated up to 2000° F, being controlled by thermocouples inside the capsule in the vicinity of the specimen. Four couples are used: One for controlling and three for measuring temperature.

Three Nichrome coils do the heating. Power may be adjusted to the proper level and coil distribution by a Variac and two rheostats. Automatic control is provided by a Brown Pyrovane

Short Cut from Lab to Mill

IDEAS for materials are born in research laboratories. But before a manufacturing department can use a new material in a product it must have many answers. Work leading to them must be on a scale approaching industrial conditions.

That's the reasoning back of the new look at metals at General Electric. A few weeks ago GE dedicated its new metals and ceramic building at its research laboratory in Schenectady. At first glance the $5-million investment seems more like a factory than a laboratory. The universal pilot plant uses the latest processes to fabricate about any metal or ceramic in semicommercial quantities.

Always in mind is the objective of bridging the gap between test tube and production quantities. This is the weak spot in most research activity, says GE management.

Freedom—Standard and special equipment is operated under laboratory conditions, with freedom from production schedules. Emphasis is on measurement and control.

Ideas do not come to the new building to stay. They are forwarded on to operating departments for use. Or if there's trouble, they go back to the basic laboratory for more investigation.

Quick Change—The new building was put together like Erector set pieces to permit quick assembly and easy alteration. Many bolting holes, from floor to roof, give the needed versatility. On short notice, traveling cranes can lift structural members into place and move heavy apparatus.

Research laboratory personnel worked closely with machine designers to come up with equipment to perform "conventional" operations with "unconventional" materials.

Working—For example, some superalloys are as brittle as glass right after they are cast. If the ingot can be deformed initially, it does not shatter and fly apart, and can be handled by ordinary methods until it ends up as a jet engine bucket or some other shape.

The hydraulic extrusion press that does this work is a 1250-ton unit designed for fast extru-

Scientists, laboratory assistants and skilled tradesmen work side by side on experiments in this one-ton arc furnace

Controller. About 0.8 kva maintains the furnace at 2000° F.

Adapted — Short-time tensile tests on refractory metals are made by an Instron testing machine. It has been adapted to high temperature work by building a tube furnace to fit on its moving crosshead and by enclosing the test string in a vacuum-tight capsule (Fig. 5).

The lower pull rod is attached to a linkage extending through an O-ring vacuum seal which rests in a groove at the bottom of the capsule. The moving seal at the top of the capsule is similar, except that it is retained in a groove cut in the pull rod linkage.

Round button-head specimens are held in the fixtures by split collars; sheet specimens are held between the serrated faces of a split grip. A small pin inserted through the grip and the specimen aids in aligning the specimen and shows telltale distortion if the grip slips during the test. Load bearing members in the hot zone are made of S-590; the capsule shell is stainless steel tubing.

Hot Test—When this apparatus is used for a high-temperature test, the upper pull rod is pinned to the load measuring cell in the stationary crosshead. The lower pull rod linkage is pinned to the moving crosshead.

Each coil of the three-coil furnace is supplied through a separate Variac so that uniform temperatures as high as 2200° F can be produced. Temperatures are measured by a platinum-platinum-rhodium thermocouple, sealed into the capsule by a Wilson-type vacuum seal. The thermocouple is next to the specimen. A vacuum of less than 10 microns is usually used, although an argon atmosphere is possible.

Frictional effects, weight of the upper part of the string and the effect of the vacuum on the load measurement are compensated for by calibration adjustment of the machine, made prior to loading each specimen.

Data are recorded autographically, so that the operator is free to check on pressure and temperature. Load versus time is plotted, and this can be converted to stress-elongation or to true stress-strain since the movement of the crosshead is constant.

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sion of superalloys. Other examples of special equipment are 10 and 16-in. rod mills. They deform superstrong alloys by operating rapidly. Chunks of metal at high temperature are brought down to size before they cool to a point where extreme strength properties become a deterrent to deformation.

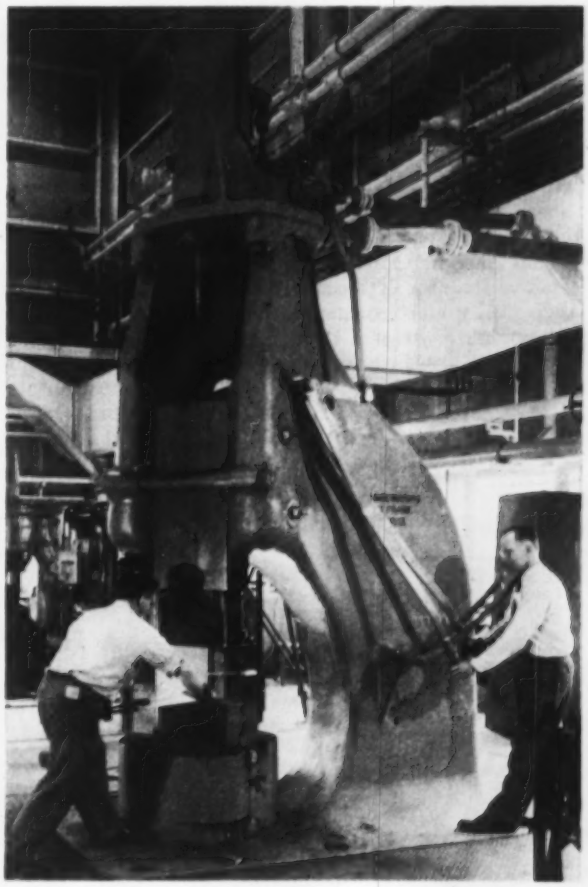
Rolling—Sometimes evaluation requires the conversion of large quantities of metal into thin sheet. Regular hot-rolling mills will do it; several are used. A new planetary mill also was installed. It will reduce slabs 1 in. thick to $\frac{1}{8}$-in. ribbon in one quick operation.

A 3-phase, alternating-current arc furnace was installed to make 1-ton heats of steel under industrial conditions. This makes it possible to turn out commercial trial lots of new alloys (such as silicon steel) for technical and economic evaluation.

Vacuum, Too—Furnaces holding from 10 to 400 lb are available for melting in vacuum to avoid atmospheric contamination.

Each operation in the new laboratory is headed by a technical staff member. He is helped by skilled metal processors and laboratory assistants who follow details. This places responsibility to make the new idea work squarely on the shoulders of the scientist who had the idea.

Guarantee: From beginning to end, the best technical understanding is applied to every project.



This 2500-lb forging hammer is used for hot working ingots to study physical properties on a production scale

Brass-coated strip as it comes from the continuous buffing line

Shiny Picture for Brass-Plated Strip

It can replace solid brass in decorative uses without loss of product quality. Oxidized brass coatings can be colored to give a variety of effects

By E. J. ROEHL
Manager of Technical Development
Thomas Strip Div., Pittsburgh Steel Co.
Warren, O.

BRASS has long been recognized for its decorative qualities; platers have been dressing up products with its gleam for over 100 years. Now, something new has been added—brass-plated steel strip.

This product combines the attractive features of brass with the wide utility and economy of cold-rolled, strip steel. It can be formed easily into hundreds of shapes.

At Thomas Strip Division of Pittsburgh Steel Co., Warren, O., a 0.0002-in. coating of brass is electrodeposited in 1 to 1½-minutes on continuous strip. The company has lines for electroplating continuous strip steel with copper and zinc (as well as other metals).

Old Way — For a number of years the company produced brass-coated strip by a duplex process. The strip was plated with copper on one line, then with zinc on a second line. Coils were heated to interdiffuse the coatings to produce brass and then put through a pickle line to clean up the surface.

This process, while costly, was used because it was better and cheaper than brass plating from conventional solutions which have a depositional rate too slow to be economically feasible.

Low Efficiency — Conventional brass plating baths generally operate at low current densities and cathode efficiencies. Brass anodes polarize at current densities above 5 amp per sq ft in conventional baths.

When this happens, their efficiency is reduced; they do not

A Few Uses for Brass-Coated Steel

Carpet edging	Table lamps	Door chimes
Handbag frames	Curtain rods	Ash trays
Door hardware	Novelties	Lamp tubing
Nameplates	Weather strip	Bird cages

supply metal to the solution at a rate equivalent to the rate at which it is being plated out at the cathode; they also throw the bath composition out of balance.

Bath Composition — Attempts have been made to improve the speed of operation of the brass bath by raising current densities and efficiencies. These attempts have been mainly along the lines of increasing the concentration of the bath, holding the "free" sodium cyanide concentration as low as possible and operating at high pH by maintaining a low and carefully controlled concentration of sodium hydroxide.

These bath compositions had to be held within narrow limits to consistently produce satisfactory color and composition of the deposit. None has been commercially successful.

New Bath—Thomas Strip has developed a new bath composition which involves high concentrations of sodium and copper cyanides, sodium hydroxide in appreciable amounts to give high solution conductivity and a low concentration of zinc.

This bath plates continuous steel strip at 120 amp per sq ft. Under quiescent conditions, the anodes begin to polarize at about 80 amps per sq ft, but under plant conditions where there is movement of the solution, polarization troubles are not encountered.

Finishes—Brass-plated strip is produced in three finishes—natural, planished and buffed. Widths range from ¼ to 22 in.; thicknesses range from 0.005 to 0.040 in.

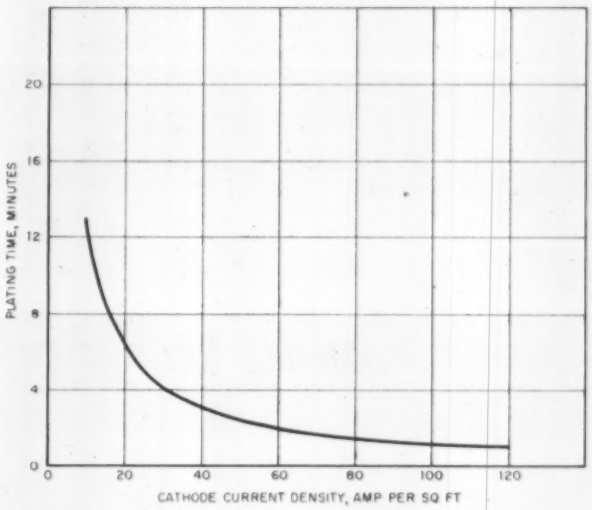
The natural finish comes directly from the plating operation and is widely used where luster is not important or where additional finishing operations are to be done during fabrication. A finishing operation gaining interest is oxidizing to produce a variety of colors and shades, followed by lacquering.

The planished surface is a semi-bright finish, widely used as a final products finish. Buffed is the brightest finish available.

Embossing—A new finish being used for brass-coated steel and for other cold-rolled or plated strip steel is an embossed pattern. It is rolled into the steel. A number of designs are available. New designs can be developed from customer patterns.

More interesting possibilities are offered by the oxidation of embossed brass-coated steel to produce various colors. The brass can be colored to produce a uniform appearance, or it can be colored and then highlighted to give a variety of effects.

Brass-coated steel offers good protection against corrosion for parts in process and lends itself readily to production of small stampings, drawn parts, tubing and roll-formed sections.



The curve shows the relationship between the cathode current density and the time required to deposit a 0.0002-in. coating of brass from the bath composition shown below. At 120 amp per sq ft, it's 1 to 1½-minutes. Conventional baths, which cannot be operated much above 30 amp per sq ft, require 5½ to 20 minutes to deposit the same coating

Typical Bath Composition

Constituent	Ounces per gallon
Sodium cyanide (total)	12—18
Copper cyanide	10—14
Sodium hydroxide	6—10
Zinc oxide	0.4—1.2
Excess sodium cyanide*	0.5—2.5

Solution	Operating Range
Ratio of Cu:Zn in solution	10—20:1
Temperature °F	165—200
Cathode current density, amp per sq ft	25—150

*Excess over that required to form $Na_2Cu(CN)_3$

Guide to Good Sawing

SELECTION of bandsaw blades for metal cutting should be guided by the material to be cut. The number of teeth, their set and operating speed vary with the job.

The accompanying table is suggested as a guide. Recommendations are based on average conditions; users operating under special conditions may find that slight variations in speed, teeth or set will increase cutting efficiency or blade life.

Blade Speed — Slow speed is needed for metal sawing. Steel requires a slower speed than soft metals; thick sections demand a slower speed than thin sections.

When blade speed is too high, teeth are not given time to bite into the metal. The result is a skidding, rubbing action which fails to cut the metal and leads to rapid dulling of the blade. As a rule of thumb, the softer the metal, the higher the cutting speed.

Material	Speed (sfpm)	Teeth	Set*
Aluminum alloy gates	125	8-10	Ets
Aluminum sheets	2200	8-10	Ets
Asbestos sheets	125	8-10	Ets
Babbitt	340	10-14	Reg.
Bakelite	340	5-10	Ets
Brass; cast, soft	340	12-14	Ets
Brass; cast, hard	125	18	Wavy
Brass sheets and tubing	340	14-18	Ets
Bronze; manganese, etc.	125	10-14	Reg.
Bronze moldings	175	18-24	Ets
Builders board	2200	12-14	Ets
Brake lining	125	8-12	Ets
Carbon tool steel	80	14	Reg.
Cast iron	125	14	Reg.
Cold-rolled steel	175	14	Reg.
Copper	175	10-12	Ets
Drill rod	80	14	Reg.
Fiber	340	8-10	Ets
High-speed steel	80	14	Reg.
Hose; canvas and rubber	2200	8-10	Wavy
Hose; metallic	250	18-22	Wavy
Iron bars; machine steel	175	10-14	Reg.
Iron sheets	175	18-22	Wavy
Malleable iron	175	12-14	Reg.
Plymetal	175	14	Ets
Mica	175	10-14	Ets
Monel metal	125	10-12	Reg.
Nickel steel	80	12-14	Reg.
Pipe	125	18-22	Wavy
Radiator cores	340	18-22	Wavy
Rubber; hard	340	10-14	Ets
Slate	80	10-14	Ets
Steel moldings; special shapes	125	18-24	Wavy
Steel tubing	125	18-24	Wavy
Transite	175	14-18	Reg.

*Ets—Every tooth set; Reg.—Regular set; Wavy—Group set
Source: Rockwell Mfg. Co.

Teeth—Blades for cutting thin metal should be selected so there always will be at least two teeth in contact with the edge of the work. If teeth straddle the work, they will be torn off.

Three sets commonly are used for metal-cutting blades. Blades with every tooth set, alternating right and left, can be used for cutting all the softer metals. Regular or raker set blades have one unset raker tooth to each pair of set teeth, the raker tooth serving to keep the cut clean. This set is used for cast iron, steel, Monel, etc. The wavy set blade has teeth set in groups, one set of teeth forming a wave to the right, while the next set forms a wave to the left. This style blade is used for cutting thin metals, such as pipe, metal tubing and radiator cores.

Selection—For the small or general shop, a good selection of blades is 14, 18 and 24 teeth per inch, with the 18-tooth regular set blade best for all-round work. Hard-edge blades should be discarded when worn. It is not practical to sharpen them.

When sawing curves, the blade must be selected with regard to the radius it must cut. Since most metal cutting is in the form of straight lines or mild curves, the best all-round blade is ½-in. wide.

carbides?

IMPELLER HUB — 4" diam., 1¼" long, from SAE 1146 annealed steel forging. JOB ANALYSIS determined multiple-spindle chuckers with ALL CARBIDE tooling.

11 operations on first side, on 6" Acme-Gridley 8-spindle chucker with double indexing and duplicate tooling. 2 pieces per cycle in 22½ seconds machine time — 320 pieces per hour.

17 operations on other side on single indexing 6" Acme-Gridley 8-spindle chucker. 26 seconds machine time — 138 pieces per hour.

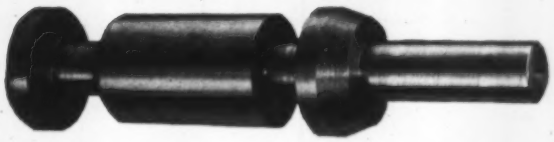
high speed?

SEAL RING — ½" thick, from 2½" diam. steel 6150 annealed. JOB ANALYSIS classed this as single-spindle job with HSS tooling.

5 shoulders rough and finish-formed to .002 tolerance, seat diam. held to .0005 tolerance, on 3½" single-spindle Acme-Gridley bar-type turret lathe. 7 minutes machine time — 8 (plus) pieces per hour.

Spindle speed automatically changed 4 times during cycle to provide suitable speeds and feeds for required finish.

or BOTH?



SHAFT — 7¾" long, from 1⅞" diam. steel 6250 annealed. JOB ANALYSIS indicated single-spindle bar-type turret lathe, with part CARBIDE and part HSS tooling.

10 operations including deep forming, turning and form-turning on 3½" single-spindle Acme-Gridley bar-type turret lathe: 5 minutes 46 seconds machine time — 9 (plus) pieces per hour.

5 automatic changes of spindle speed during the cycle provided speeds and feeds best suited for using both HSS and Carbide tools.

let the job analysis dictate the right tooling method

(And the Right Machine)

All Acme-Gridleys are built with a rigidity factor to withstand the pressure of *any* cutting tool yet devised—at speeds as fast as modern cutting tools can "take it." With such a margin of power, speed and stamina built into each of National Acme's COMPLETE LINE of multiple- and single-spindle bar and chuck-type automatics, you can safely let the job analysis dictate:

1. **The best tooling method.**
2. **The machine best suited to produce the job most economically.**

And you can be equally sure that tooling recommendations from National Acme will be based upon sound, experienced judgement.

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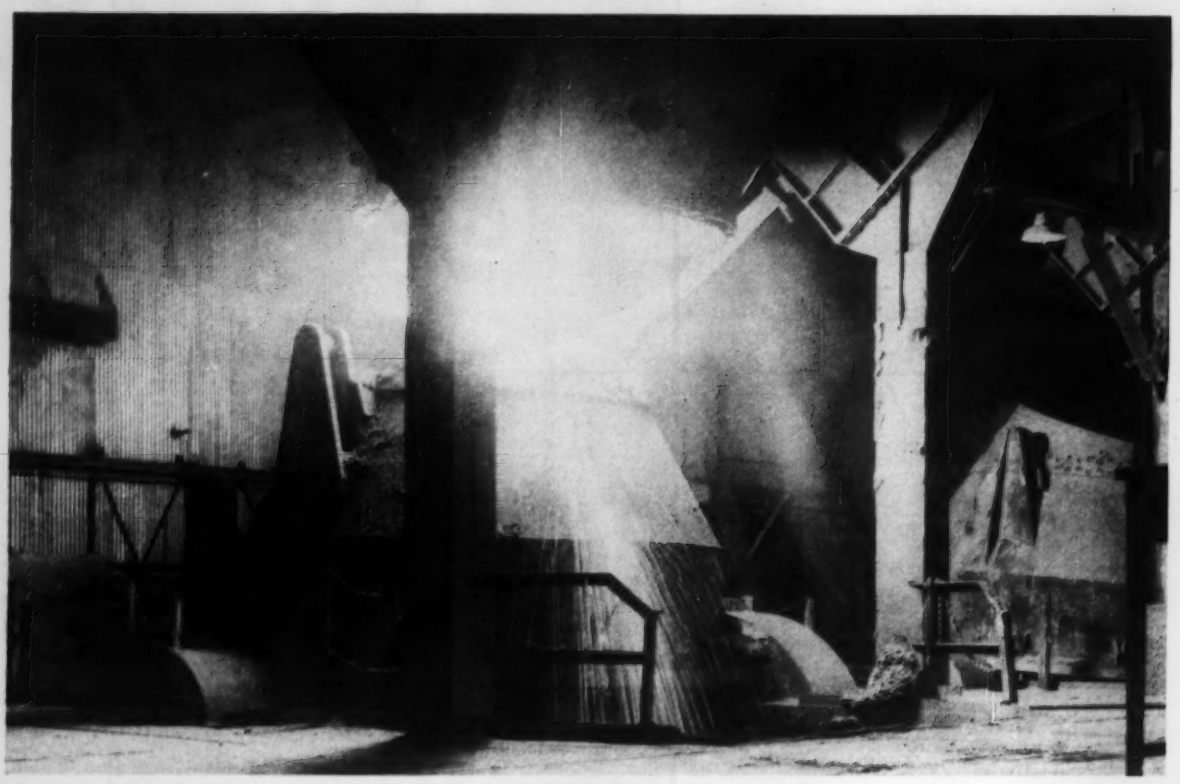

Charging floor of oxygen-blown converter plant of McLouth Steel Corp. at Trenton, Mich. The hood immediately above the nose of the converter is a water-cooled section with refractories which lead the gases to the gas cleaning system

Ways To Boost Tonnage

By JOHN D. KNOX
Steel Plant Editor

BEFORE turning any power shovels loose, steelmakers planning to increase open-hearth and electric steel production will find it profitable to consider these reports. They were presented at the annual meeting of the Association of Iron and Steel Engineers, Chicago, Sept. 26-29.

Take the paper, "Increased Steel Production from Desiliconized Hot Metal," by E. C. Wright. Prof. Wright heads the department of metallurgical engineering, University of Alabama.

He explained the influence of desiliconized hot metal (wash metal) on the production rates of furnaces. Various amounts of wash metal are included in the charge instead of normal hot metal containing 4 per cent carbon, 1 per cent manganese, 1 per cent silicon at the usual mixer temperature of 2450° F.

When normal hot metal is blown with oxygen to about 3 per cent carbon, 0.40 per cent manganese and 0.20 per cent silicon, the temperature rises to 2950° F. Adoption of this practice, he contended, would increase production capacity at least 65 per cent for present open-hearth installations.

Ups Output—An open-hearth plant producing 1 million tons of steel per year would produce 1.4 million tons with the use of 60 per cent wash metal. Based on 350 operating days per year, production would amount to 4000 tons of steel per day. This would require 2933 tons of ordinary hot metal to yield 2640 tons of wash metal. The desiliconizing operation could be done in one 30-ton converter, which would produce 150 tons of wash metal per hour (3600 tons per day).

If high-pressure oxygen is used, no blowing equipment would be required.

It was estimated that such an installation would cost about $3 million. This represents an investment cost for extra output of about $3.33 per annual ingot ton, compared with the present $30 to $40 per ton for new open-hearth installations. Comparable results seem possible in electric furnace plants where hot metal is available.

Production of steel in converters

CANNON FOUNDRY
SIXTEENTH CENTURY

Cannon was as revolutionary a weapon in 1500 A. D. as the H-bomb is today. "Hooped cannon" made of iron strips banded together exploded so often that gunners fared as badly behind a gun as did the enemy in front. Then foundries began to cast solid cannon in crude molds as shown in this reproduction of an old Dutch engraving—and no longer could walled cities stand up under "modern" cannonading.

Crafts and craftsmen through the ages

NUMBER FIVE OF A SERIES

Enlargements of illustrations available upon request.

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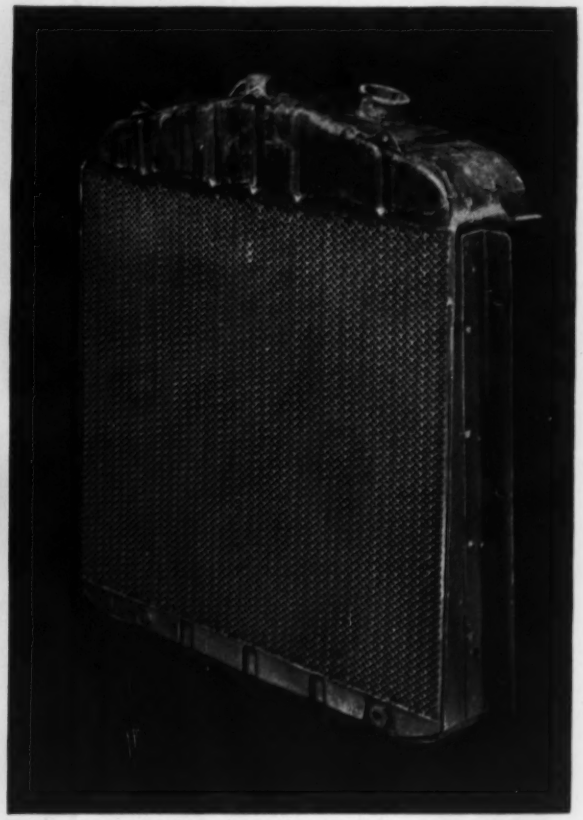
Heavy buffing compound residue is generally tough to remove . . .

but comes off quickly and economically with vapor degreasing . . .



leaving parts clean, bare, dry, ready for next operation.

when parts are heavily contaminated • when they're thin-gauge metal

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CHECK THESE VAPOR-DEGREASING ADVANTAGES

- **Better solvent action on contaminants**
- **Safer—nonflammable**
- **Lower solvent losses**
- **Better removal of moisture from work**
- **Better stability with light metals**

You can make tough, trouble-making runs *faster* . . . get *fewer rejects* . . . operate at *greater over-all economy*. The answer? DOW PERCHLOROETHYLENE. Why? This stabilized solvent's higher boiling point gives longer, more thorough cleaning action before temperature of the parts reaches that of the solvent. Buffing compounds and heavy greases roll off. Thin-gauge parts don't require second or third reruns.

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*TRADEMARK

you can depend on DOW SOLVENTS DOW

top blown with practically pure oxygen is steadily increasing, according to C. R. Austin, manager, oxygen converter department, Kaiser Engineers, Oakland, Calif.

Foresees Growth—During 1949-1952 about 12,000 tons of steel were made experimentally by two Austrian steel companies. In 1953 they made 365,000 tons. McLouth Steel Corp., Trenton, Mich., started production without previous pilot plant operations in December, 1954. Mr. Austin estimated the combined production of the Austrian plants and McLouth in 1954 at 750,000 ingot tons. In his opinion, the combined production will approach 1.7 million tons in 1955.

Production at McLouth is rising each month. As many as 32 heats per day have been made.

Owing to the extremely fine particle size of the fumes generated in the oxygen converters, it was necessary to provide for an efficient gas cleaning system.

An appreciable length of the duct leading from the converter to the remainder of the gas cleaning system is mounted on wheels on an inclined track, and the entire length of this section can be raised and lowered at will. Immediately above the converter, the duct consists of a water-cooled section with refractories. Above this section the duct is refractory lined.

Immediately below the water-cooled section is an annular pipe with holes drilled at intervals to permit water to be ejected into the gases going to the gas cleaning system.

At the upper end of the movable section of the hood is a two-pass "sparkbox" in which numerous water sprays are located. Dampers are provided in the ducts between the sparkbox and the tile washer. The three ducts coming from the converters lead to a common main which takes the gases to the tile washer. From this washer gas goes to a disintegrator and from there to a stack. The disintegrator is turbine driven; exhaust steam goes to the same stack as the effluent gases. The general effect is that of a cloud of steam issuing from the stack.

Side Hole Provided—The pouring practice from the converter vessel is different from that in the usual bessemer operation. A pouring hole is provided in the side of the converter opposite the charging side. After blowing a heat, the majority of the slag is poured off through the converter mouth into the slag pot on the charging side of the vessel. The vessel is turned to the opposite side so the slag remaining in the vessel is below the vessel mouth, and steel runs out the pouring hole into the teeming ladle. After the metal is out, the remaining slag is emptied through the vessel mouth into the slag pot.

Blast furnace operators were brought up to date on recent developments in sintering and pelletizing by E. N. Hower, manager, industrial department, Dravo Corp., Pittsburgh. He co-authored a paper on this subject with J. A. Anthes, process engineer, Dravo.

Mr. Hower mentioned that one of the most satisfactory ways to increase the production rate of sinter per unit area is by increasing the bed permeability. For a given bed depth the permeability is a direct function of the amount of air blowing through the bed and an inverse function of the amount of suction required to pull this air. An increase in permeability gives a higher sintering rate without a requirement for a higher amount of suction. This means that increased fanpower is kept to a minimum.

Further Improvement—When the sinter mix contains a large amount of fines, improved permeability can be obtained by "micropelletizing" these fines by secondary mixing in a drum similar to that used for pelletizing. When the proper amount of water is added, this device produces small seed pellets from the finest material and leaves the coarser constituents relatively unaffected. This not only gives a higher permeability but reduces the amount of dust passing through the grates of the sintering machine.

This principle has been extended further by Jones & Laughlin Steel Corp. The ore is formed into small pellets of ¼-in. diameter. Then it is sintered under conditions that fuse the pellets. The mass is quite porous and has advantages in ease of reduction and a high permeability on sintering machines.

Another method of improving permeability is by the use of a roll feeder. The material is distributed with a short drop onto the feeder by an oscillating conveyor belt. The short drop from the roll feeder places the material evenly on the sinter strand. This combination of two short drops gives little compacting and practically eliminates lateral variation in the permeability.

More Advantageous—The 8-ft wide machine is rapidly becoming standard for sintering tonnages of iron ore in excess of about 2000 tons per day, Mr. Hower stated. Use of larger machines in place of three or four smaller ones permits better control of sinter production, simplifies feeding problems, reduces the number of pieces of auxil-

Electronically controlled 48-in. contour turning lathe designed for shape rolls. Its carbide cutting tool is moved automatically by independent long and cross-feed motors controlled by stylus contact with the template in right foreground

iary equipment and decreases maintenance.

Several improvements in the durability of the sinter machine and auxiliary equipment have been made. They include a separately added hearth layer laid on grates ahead of the point where the sinter mix is added. Its advantages:

1. Increases life of grate bars and pallets.
2. Reduces the amount of fines drawn through the grates.
3. Causes sinter to come off the grates easily without sticking.

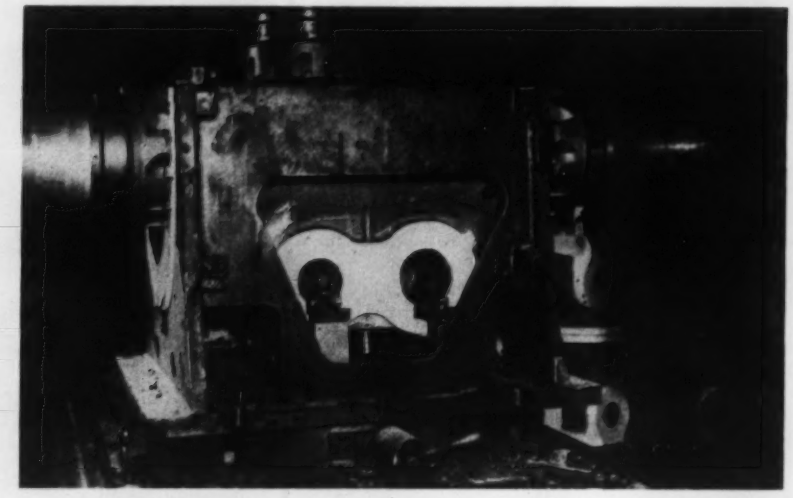
Another device which improves the life of pallets is the Lurgi-type lowering sprocket wheel at the discharge end of the machine. This device engages the pallets when they reach the end of the sinter strand and separates them from each other while they are lowered to the return track. This reduces the stresses from the pallets and gives the reduced impact loading on the machine's framework and building at the discharge end of the machine.

Something New—Mr. Hower announced that a new device for producing pellets has recently come into prominence—the pelletizing disc or pan. The pan, which is fed with powdered materials, slowly rotates on a tilted axis. The powder is sprayed with water as is the pelletizing drum. The action of the rotated disc has a classifying effect and produces a segregation of pellets. The larger pellets roll toward the rim of the disc and the smaller ones stay near the center or beneath the larger ones. When the disc becomes filled, only the larger pellets are discharged over the rim.

Mr. Hower suggested that in the improvement of existing practice and in design of new plants, proper mixing is probably the most rewarding field for close study.

J. K. Seyler, superintendent, Hazelwood cold finishing department, Jones & Laughlin Steel Corp., Pittsburgh, spoke on "Hot Extrusion of Carbon Steel Solid Sections." He pointed out that the process requires either 4 or 5-in. billets for the press, predicated on the weight per foot range of ½ to 12 lb.

Billet length varies from 4 in. in diameter by 5 in. long to a maximum of 5 in. in diameter by 20 in. long. Length is determined by the extrusion ratio of the section and the desired length of the as-extruded product.



Profile Milling Time on Cast Steel Cut 79 Per Cent

DeLaval Steam Turbine Co., Trenton, N. J., replaced two sets of high-speed steel cutters with one set of standard-face Kennamills to rough and finish profile mill cast steel pump brackets. Results: Milling time cut from 4 hours to 65 minutes; cutter life up from two pieces per grind to five; time for reconditioning cutter down from 3 hours to 1. The new cutters, made by Kennametal Inc., upped speeds and feeds and produced a higher microinch finish

How It Is Done—Billets are heated in a triple-coil, 2-stage, 60-cycle induction-coil-type billet heater of special design which employs helium under low pressure as a protective atmosphere. The unit is capable of heating carbon steel billets from room temperature to 2300° F at 4000 lb per hour.

Any steel that can be rolled can be extruded. Theoretically, it is possible to extrude any shape for which a die can be made. There are some practical limitations, such as sharp corners, thin fins and small inside radiuses. But by a combination of hot extrusions and cold drawing, the variety of sections obtainable is unlimited.

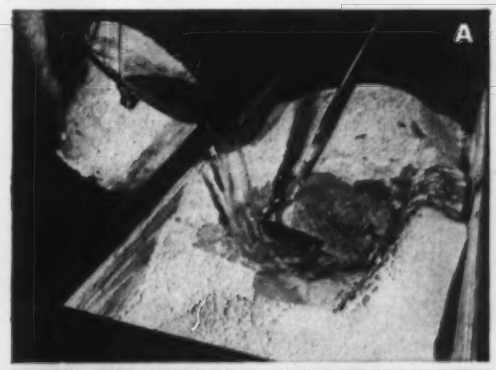
Some of the ways in which the process may be used to economical advantage are:

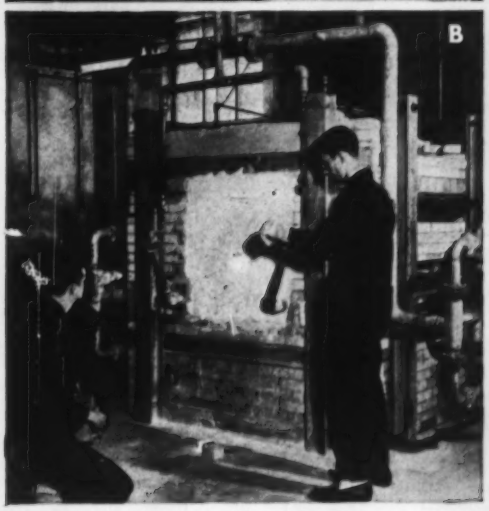
1. Processing materials that cannot be rolled, or are difficult to roll.
2. Producing small quantities insufficient to warrant setting up a rolling mill. This application is becoming more important with the scrapping of small hand mills in favor of the large, high-production mills.
3. Executing rush orders when the quantity is limited. The extrusion press can be set up quickly if proper dies are available.
4. Producing sections that are impossible or impracticable to roll. With cold-drawing, hot extrusion can be used to advantage to produce complicated sections. While the final cost may be high, the section may represent practically a finished part and save machine work. Possibilities of this application appear unlimited, and it is in this area where we find the greatest amount of interest.

Rotation Is Key—J. MacGregor, board chairman, York-Gillespie Mfg. Co., Pittsburgh, described a new high-production method of heat treating oil industry goods. It has resulted in large savings in alloying materials, since molybdenum additives are no longer used in the basic production; manganese has been reduced considerably. Higher and more uniform tensile properties are being achieved. The equipment that keeps the pipe in continuous rotation throughout normalizing and quenching is the heart of the process.

Under development is a special mechanism. It will rotate rounds, squares, hexes, steel wheels, etc., as they enter the normalizing furnace to afford uniform heat and minimize warpage distortion.

NEW B&W 3200 degree Refractory Concrete





Today, in some types of heating and melting furnaces, complete linings or sections of linings are subjected to temperatures over 3000 F and, with the trend to higher and higher operating temperatures, the problem of finding the most economical refractories for this "over 3000 F service" will become even more important.

Now, with B&W's new Refractory Castable-3200, furnace builders and operators can cut installation costs by using castable construction for services up to 3200 F. As easy to use as other B&W refractory concretes, B&W Refractory Castable-3200 can be poured or trowelled into place or applied with a cement gun.

Several years ago, B&W developed Kaocast, the first successful 3000 degree refractory concrete, to lead this high temperature castable trend. B&W Castable-3200, like Kaocast, is made with an alumina-silica base and is recommended for temperatures from 2600 to 3200 F. Because of its very high temperature properties, it is not recommended for temperatures below 2600 F.

If you have not taken advantage of the fast, low cost installation of castables for your high temperature requirements, we suggest you investigate B&W Kaocast and the new B&W Castable-3200. Your local B&W Refractories Engineer has all the facts.

A Mixed like structural concrete, B&W Refractory Castable-3200 can be poured, trowelled or gunned into place. • B High temperature laboratory furnace lined with B&W Refractory Castable-3200.

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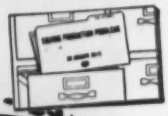
1 PRODUCTION PROBLEM: To speed production and cut costs of removing extra-thick weld seams from 2¼ ton industrial boiler drums. Drums are made of 1" thick steel sections, welded together. Wickes Boiler Co. was using grinding wheels—found them slow, unsatisfactory.

2 SOLUTION: A 3M Representative suggested that this Saginaw, Michigan, manufacturer switch to the 3M Method using Three-M-ite Resin Bond belts installed on a swing grinder. Manufacturer found that each 3M belt removed these extra-heavy-duty welds faster, better.

3 RESULTS: An immediate production increase with much higher quality finishes. (Note: manufacturer experimented with a "Brand X" belt, found it averaged only 9 feet of weld per belt . . . 3M belt removed 30 feet!) A 3M Representative can help you solve your grinding and finishing problems, too. Call him today. There's no cost or obligation.



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Utility Fastening

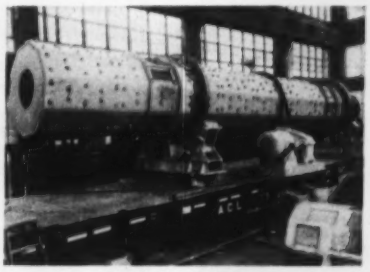
End-welded, threaded studs fasten the liner plates in huge tumbling barrels

STEEL liner plates in huge rotary tumbling barrels made by N. Ransohoff Inc., Hamilton, O., must be easily replaceable but secure enough to withstand prolonged punishment.

They are in constant jarring contact with heavy castings being cleaned and desprued in a cascading bath of sharp cleaning stars and cleaning compound. For this fastening job, Ransohoff uses stud welding.

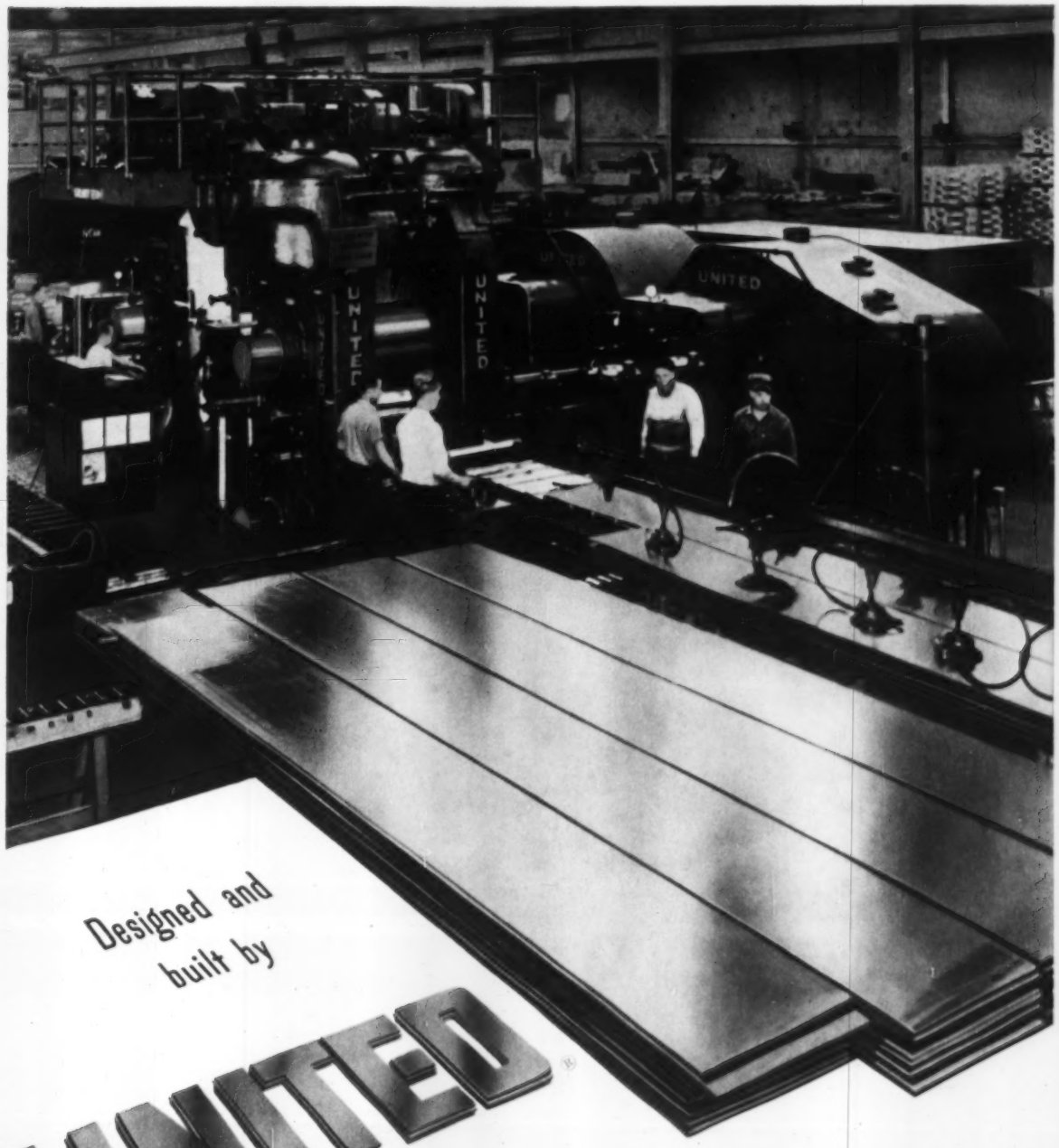
Each of four compartments in a tumbling barrel is lined with 20 separate replaceable plates of ¾-in. steel. They are held to the barrel by Nelson threaded studs (¾-in. in diameter), which are end welded to the backs of the liner plates.

The studs project through holes in the barrel and are fastened on the outside by nuts and grit-tight washers. Replacement of liners is simplified because the nuts can be reached easily, and the studs cannot turn when nuts are removed —800 studs are used on the barrel.



TUMBLING BARREL
. . . plates and studs take a beating

Stud welding improves the design by leaving the faces of the liner plates, which touch the tumbled work, free of projections. The studs fulfill a further fastening function by holding in place chilled steel bars which are inserted between the liner plates. The bars project sufficiently to carry the work up the sides of the rotating barrel and create the cascading action.



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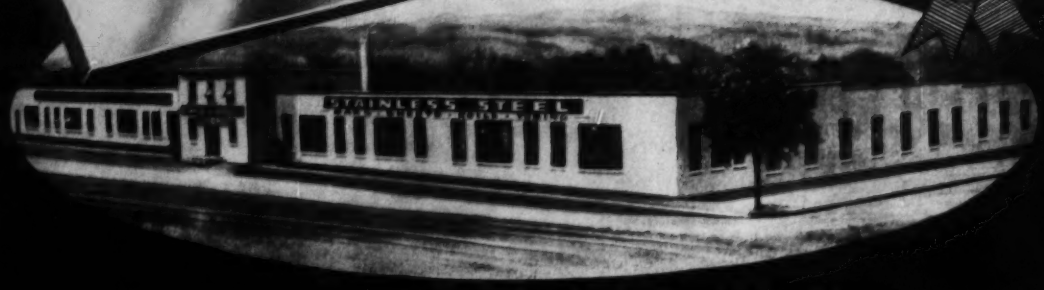

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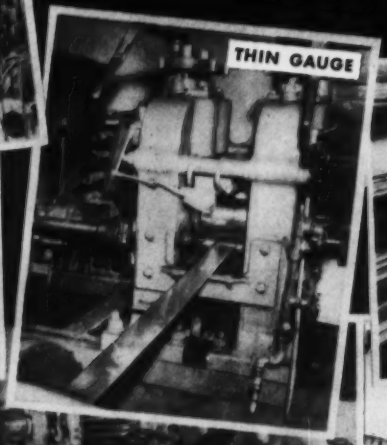

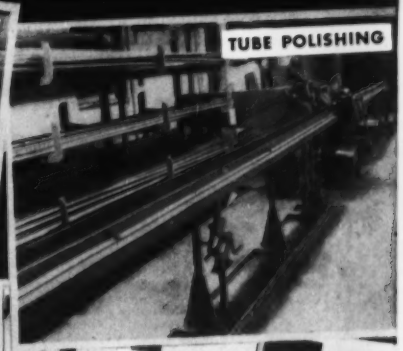

ULBRICH Stainless Steels

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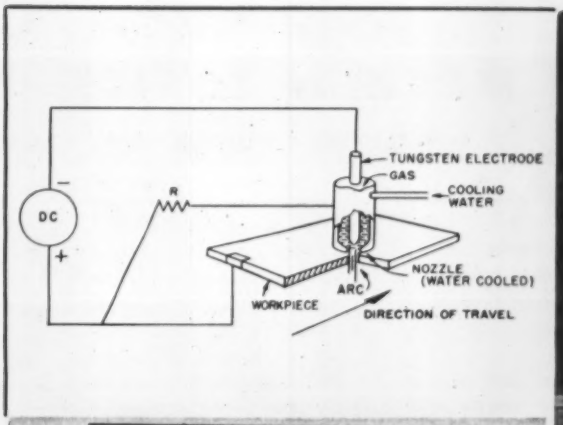
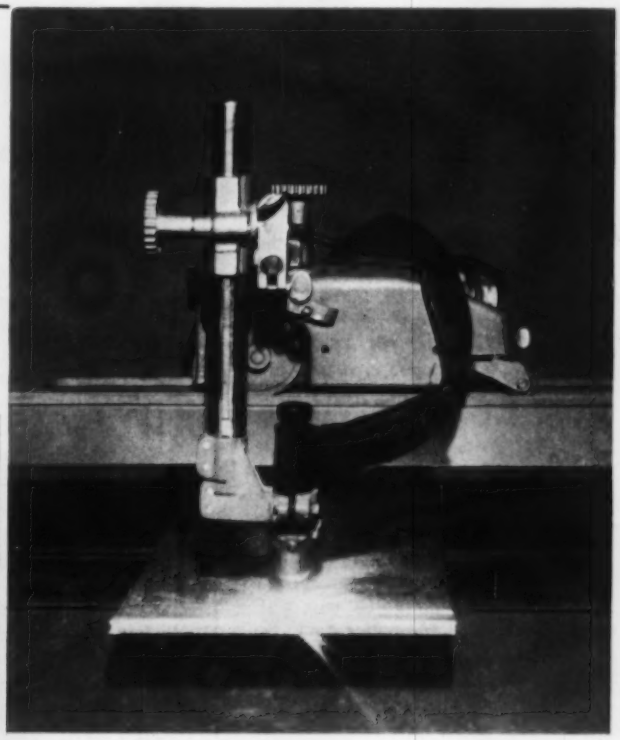




New look in aluminum cutting. Hydrogen-argon atmosphere concentrated around the arc from a tungsten electrode literally blasts its way through the soft metal. The cut looks like a sawed edge

Arc Cuts Aluminum Like Butter

TYPICAL CONDITIONS

Aluminum Cutting with Mechanized Heliarc Torch

Open circuit voltage — 100 v
Gas mixture — 65 per cent argon, 35 per cent hydrogen

Thickness	Speed ipm	Amps	Volts	Gas Flow*
¼-in.	300	320	70	50
½-in.	125	320	75	60
¾-in.	75	320	77	70
1-in.	50	320	80	70

*Cubic feet per hr

THROW AWAY that chisel. A gas-shielded arc torch has just come on the market that can slice ¼-in. aluminum at 300 ipm and turn out an edge that looks like a saw cut.

The tungsten electrode torch is a variation on a standard Heliarc welding torch made by Linde Air Products Co. Changes have been made in the nozzle and collet and in the electrical circuit. It would be possible to convert welding torches for cutting, but for the present at least, Linde will sell units for cutting only, and will not furnish adapter kits.

Jet Stream—Cutting is done by a high-temperature, high-velocity constricted arc between a tungsten electrode and the work. The arc melts the metal; a hydrogen-argon gas jet blasts it away and prevents oxidation of the cut face.

So concentrated is the arc that on ¼-in. plate the kerf cut by the torch is only 3/16-in. wide at the top and ⅛-in. wide at the bottom. The edges of the cut are smooth and bright.

Mechanized cutting speeds range from over 300 to 50 ipm for 1 in. material.

Within Limits—This first version will cut aluminum up to 1 in. thick. Linde won't say what it will do with other nonferrous metals but admits that tests are "promising."

Torches and controls are available for either mechanized or hand cutting. For either type, no great

skill is required. The hand version has several features that make it easy on the operator.

Pilot Arc — A switch on the torch first strikes a pilot arc, so the operator can see where to start his cut with his face shield down. A time delay relay automatically switches on cutting arc and gas after a few seconds.

He can start the cut at the edge of the material or in the middle with equal ease. When starting in the middle, the burn through appears instantaneous, and the resulting hole is scarcely wider than the cutting kerf. Manual cutting speed on ½-in. plate is about 60 ipm.

Until he gets used to it, the operator may have difficulty maintaining the arc. As a safety feature, it automatically cuts out when it has no metal to cut, but can be restarted immediately by a button on the torch.

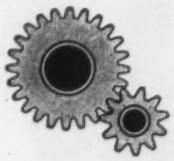
Mechanized Cutting—Linde has a simple track-riding dolly for

Torch is made in hand as well as machine-operated versions

mechanized cutting. It's their standard Oxweld machine carriage with special gearing for fast cutting speeds (see table).

Gas mixture for machine cutting is 65 per cent argon, 35 per cent hydrogen. For manual cutting, it is changed to 80 per cent argon, 20 per cent hydrogen. The power supply has an open-circuit voltage of 100 volts.

For easy portability, the control cabinets have been kept small and light. The one for the hand torch is not much bigger than a portable typewriter case.



MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

THERE'S a saying in the aircraft industry that when the first plane of a new type rolls out of the factory, it's obsolete.

At the other end of the production line, major and minor design changes are being made. What's more, designers are working on models to succeed the "new" one.

Stand-By — Engines for these airplanes have to be turned out on a high-production basis, but the production man in the engine plant has to standby, practically with wrench in hand, ready to adapt equipment for design switches.

Production requirements like these demand what R. A. Powley calls "adaptable special-purpose machine tools." Mr. Powley, general manufacturing manager, Aircraft Engine division, Ford Motor Co., Chicago, says this means: "A special machine designed for a specific engine part and operation, comprised of assembled components capable of being rearranged to meet new conditions caused by engineering changes in the engine part."

Specials in Stock—Speaking at the Air Materiel Command Industrial Conservation Seminar in St. Louis, Mo., he insisted that "adaptability" be the watchword of a new concept for designing special machines.

"This may be done," he continued, "by means of research, to establish a complete assortment of shelf items producible in quantity by machinery manufacturers to standard designs. The assortment would include: Bases, columns, hydraulic unit packages, dials, indexing mechanisms and work heads.

"Most adaptable special machines could be assembled from standard components, doweled in place. More complex adaptable special machines might require a special-base component, with the remainder of the machine assembled from standard items.

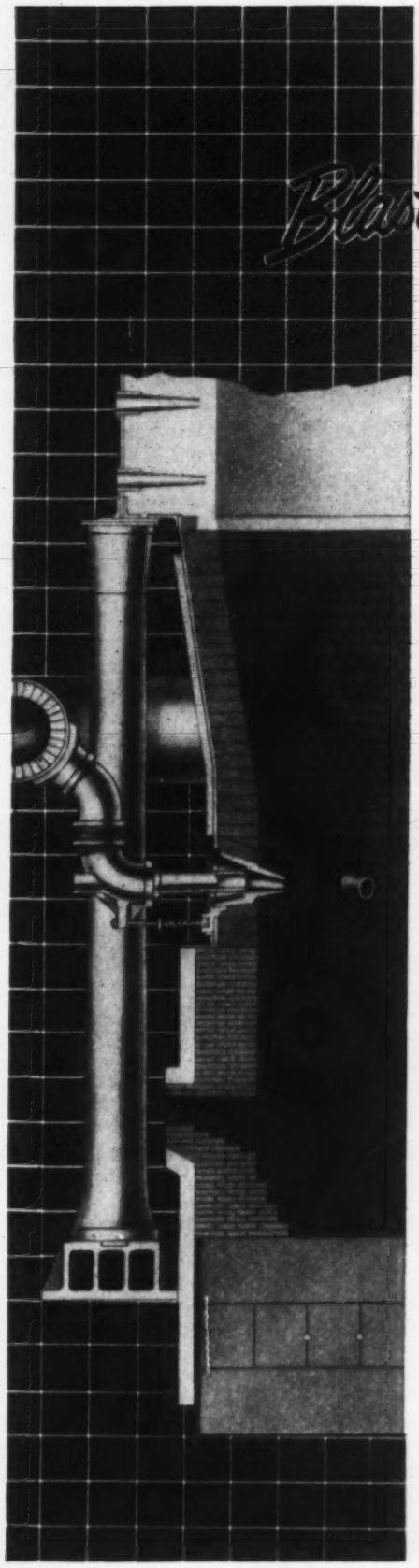
"When engineering changes occur affecting the configuration of the part, one or more components could be modified or moved and the . . . machine would be ready for production."

Mass Problem — Although he's talking about aircraft production, the problem Mr. Powley points up isn't exclusive with that industry.

It may be more acute in aircraft than it is elsewhere, but this problem is so important to the rest of industry that it accounts for a major trend in the machine tool business.

Both Ends — Builders are closing in on the problem from both ends. Builders of special-purpose machines are almost unanimous on the point that the trend to watch concerns unitized, segmented or module construction. The words are different ways of saying they're all working in the same direction.

From the other direction come builders of multipurpose, standard machines. They are adding better controls, gages, drives and components to the inherent versatility of the machines. Out of the combination they're getting higher production without giving up the advantage of the machines for short-run jobs.



Blast Furnace Capacities Increased up to 20%

WITH

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CARBON LININGS

Increases of up to 20 per cent in rated furnace capacity have been achieved when carbon linings were installed up to the mantle — *within the same hearth and under the existing stack shell.* These increases were possible because of the superior refractoriness of carbon, which permits thinner wall constructions with consequent enlargement of inside furnace diameters.

Numerous construction cost analyses have shown initial installation of these "National" Carbon Linings to be more economical because internal cooling is eliminated, which results in much lower maintenance and operating costs.

In addition, "National" Carbon Linings maintain a smooth inner face with freedom from adherence which also helps to improve operating efficiency.

We will be glad to have our representative call at your convenience to supply complete information on "National" Carbon Linings for Blast Furnaces.

The term "National" is a registered trade-mark of Union Carbide and Carbon Corporation

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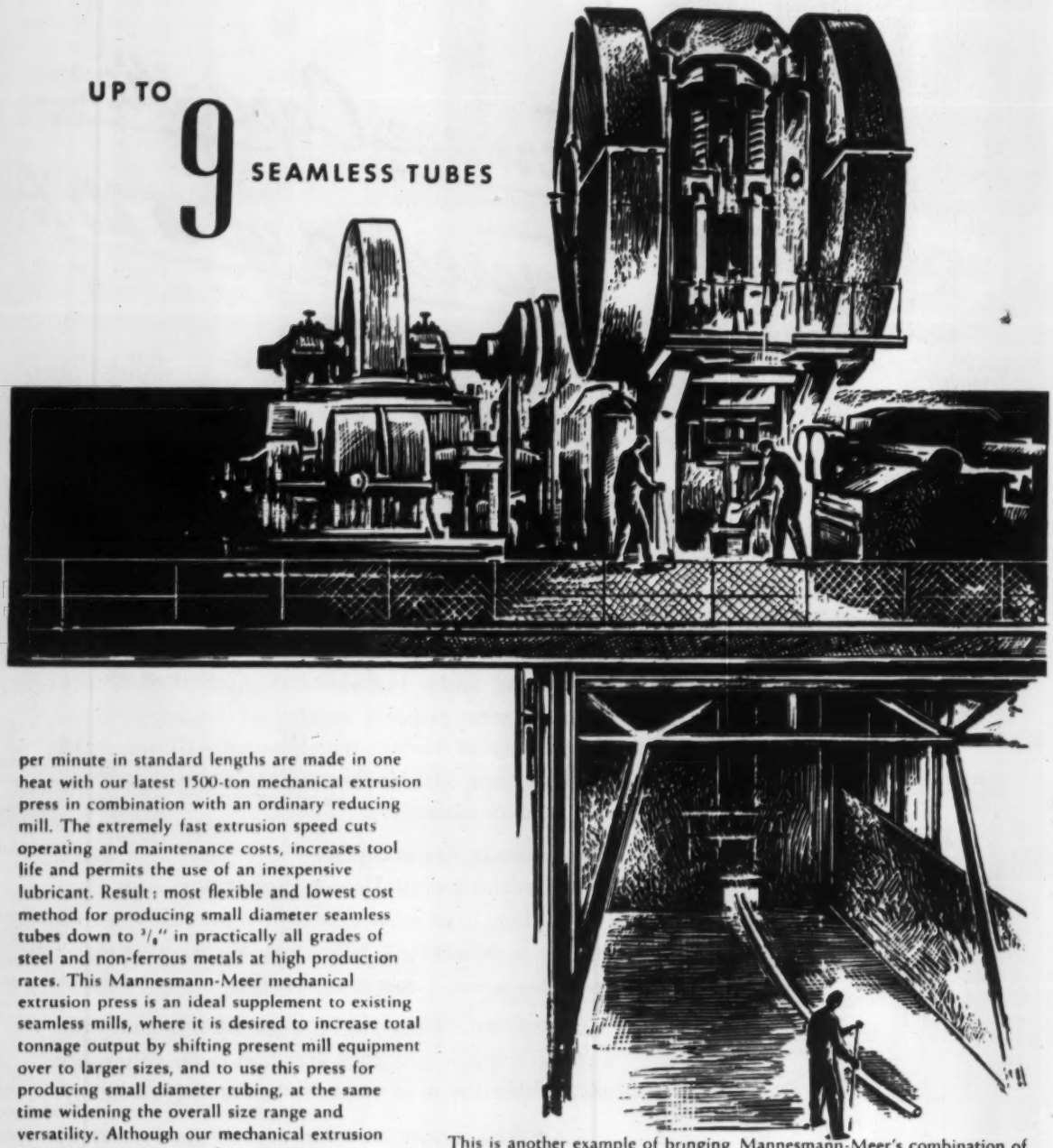
UP TO 9 SEAMLESS TUBES



per minute in standard lengths are made in one heat with our latest 1500-ton mechanical extrusion press in combination with an ordinary reducing mill. The extremely fast extrusion speed cuts operating and maintenance costs, increases tool life and permits the use of an inexpensive lubricant. Result: most flexible and lowest cost method for producing small diameter seamless tubes down to $^3/_8$" in practically all grades of steel and non-ferrous metals at high production rates. This Mannesmann-Meer mechanical extrusion press is an ideal supplement to existing seamless mills, where it is desired to increase total tonnage output by shifting present mill equipment over to larger sizes, and to use this press for producing small diameter tubing, at the same time widening the overall size range and versatility. Although our mechanical extrusion presses are in operation for over 25 years, continuous development is incorporated in today's press design to match present and future operating requirements.

This is another example of bringing Mannesmann-Meer's combination of

- CREATIVE ENGINEERING
- DESIGN EXPERIENCE
- OPERATING BACKGROUND
- AMERICAN MANUFACTURING SKILL

to bear on your tube mill problems.

MANNESMANN-MEER

ENGINEERING AND CONSTRUCTION COMPANY, 900 LINE STREET, EASTON, PENNA

WORLD SPECIALISTS IN HIGH-SPEED TUBE MILL MACHINERY

Incoming shipments get a second sampling check for ID, OD and surface finish

Metalworking operations include cutting to length, tapering and milling a slit

Sampling Works for the Snorkel

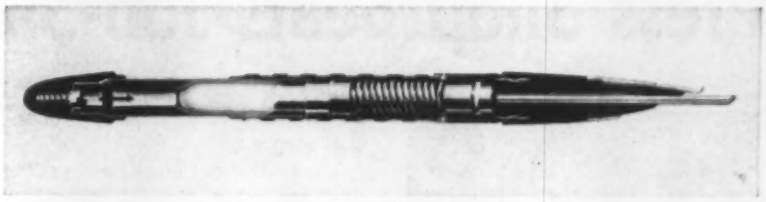
PENMAKERS have troubles, too. For the W. A. Sheaffer Pen Co. it was the "snorkel," a retractable tube that gulps ink from the bottle.

One reason is ink. People use any kind, not just one the maker recommends. They range from the strongly acid to the strongly alkaline. Hydrochloric and sulphuric acids and corrosive dyes are among typical troublemakers.

Not Sold on Gold—First versions of the snorkel had a 14-carat gold tube, excellent for corrosion resistance, but expensive and easily bent. Rejections of tube stock ran as high as 50 per cent. Needed: A cheaper, stronger, more uniform material.

The answer, worked out with Superior Tube Co., was a high-nickel, high-cobalt alloy. A standard alloy with superior corrosion resistance, Sheaffer calls it "L607." Just as important as the material is the quality control program the companies worked out.

Close Control—Most of the inspection burden is shifted to the supplier, saving much handling and the cost of returning rejects. Superior inspects every inch of tubing and rejects any defective length. Then random samples of 75 ft of tubing are picked from each 10,000 ft and inspected inch by inch. If more than seven defects are found in the 75 ft, the entire 10,000 ft are reinspected.

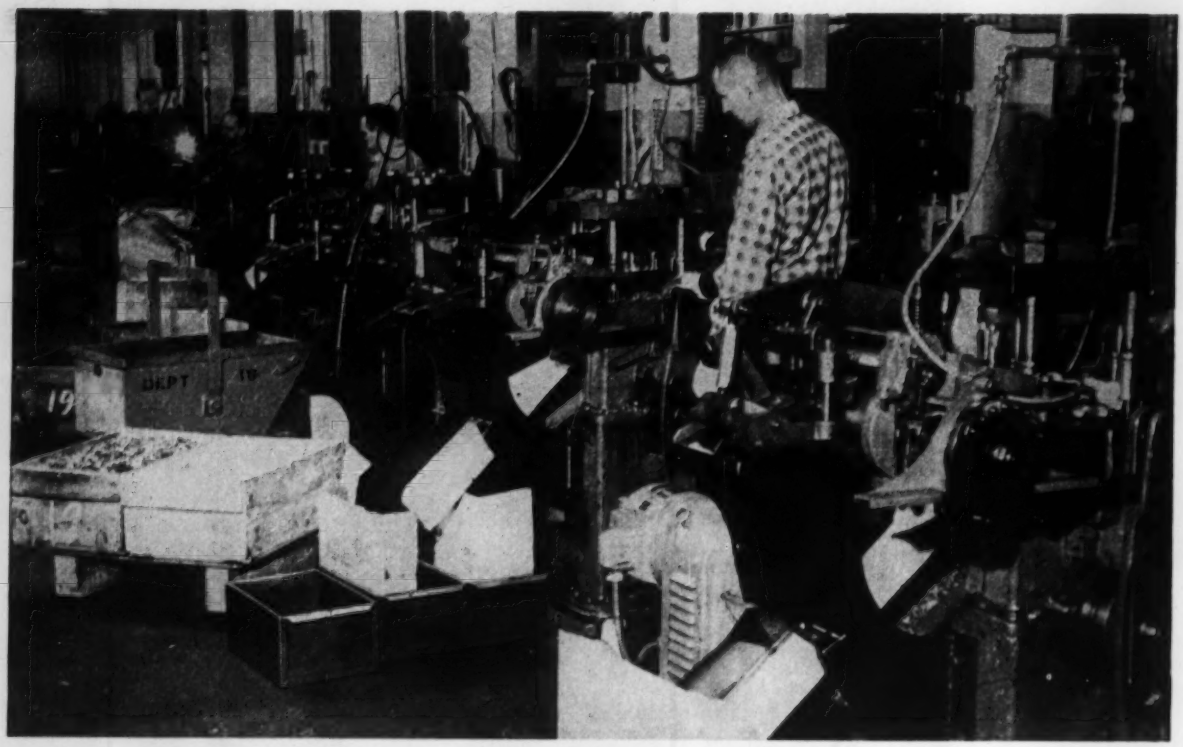


Inspectors look for: 1. Outer diameter: 0.0625 ± 0.001 in. 2 Inner diameter: 0.052 ± 0.001 in. 3. Surface condition. The first two are checked by standard gages. Surface condition is judged visually by mutually agreed-on standards. Stock is shipped in random lengths of 5 to 12 ft.

Double Check — When Sheaffer gets the shipment, it checks 75 ft from each 10,000. Theoretically, over ten defects in the 75 ft are cause for shipping the whole lot back to the supplier, but that hasn't happened.

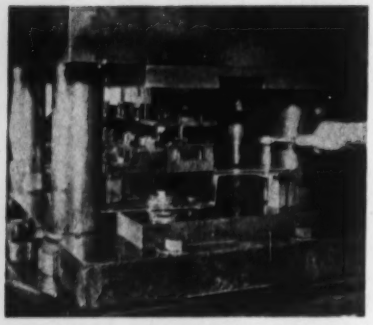
Sheaffer eventually cuts the tubing into 2 in. pieces. Why, reasoned quality control, should we reject a whole length for a flaw that spoils only a few inches? Now usable portions of rejected lengths are salvaged.

Adding up the benefits, the company gets: 1. Better material at half the cost. 2. A rejection rate of less than one-half of 1 per cent. 3. Drastic reduction in inspection costs. 4. Enviable co-operation between supplier and user.



Line of seven 25-ton Henry & Wright automatic dieing machines at H. L. Judd division, Stanley Works, turns out wide variety of hardware parts

Press Shop Beats Job-Size Problem



Even complicated dies are changed in an hour. Die on this 150-ton dieing machine is easily accessible, an important change-over factor

ORDERS ranging from 1000 to 2 million parts go through the dieing machines at H. L. Judd division, Stanley Works, Wallingford, Conn. This range calls for high speed for the long runs and ease of die change for the short ones. It also calls for suitability for progressive dies, Judd production men say.

Load—Dieing machines get a new job when demand and complexity will justify the cost of the progressive die. Long die life on the machines also is a factor.

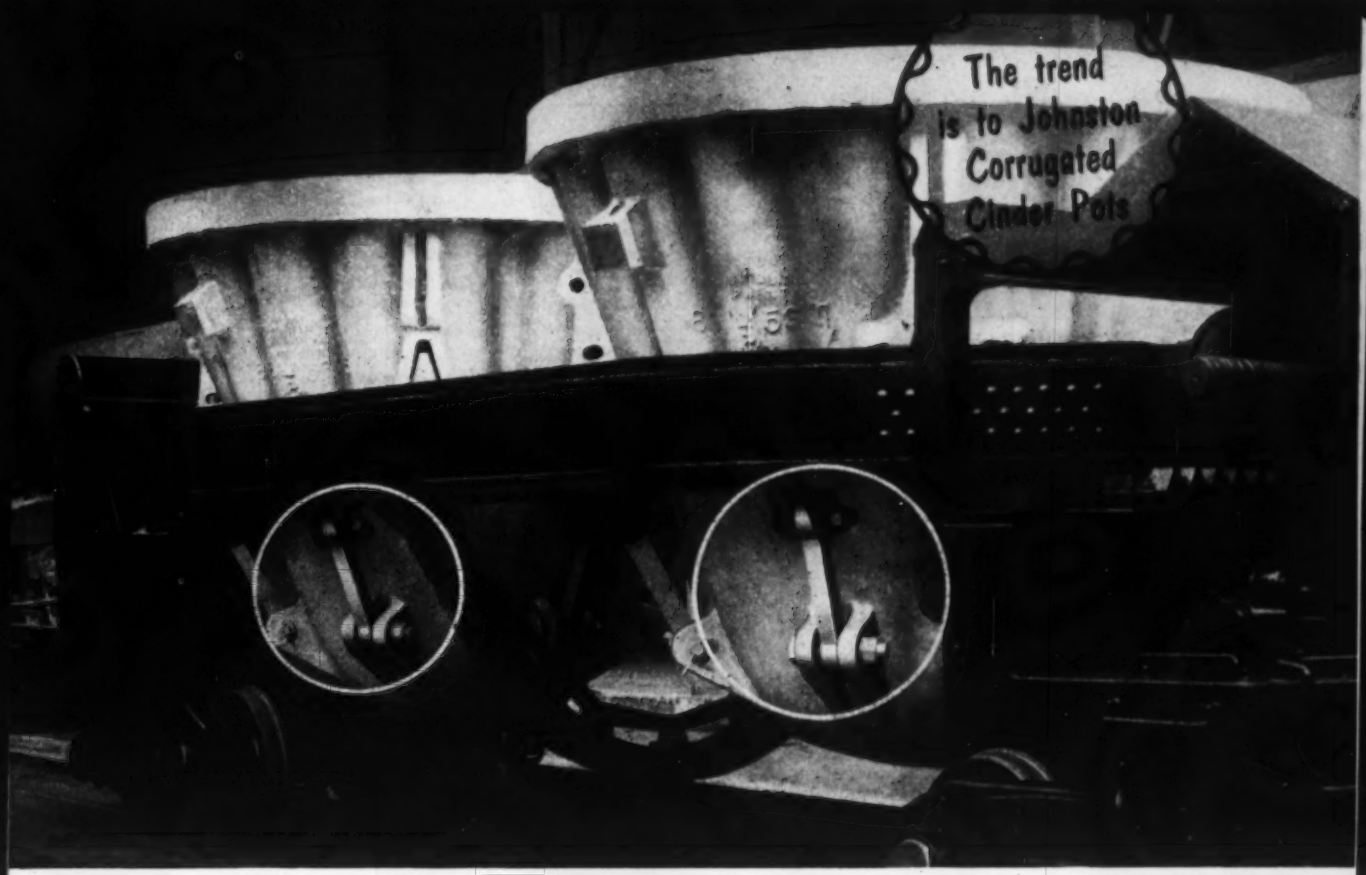
"Adaptability for short runs is a must," Judd's pressroom foreman explains. Quick die setup and high speed make it possible to set up and run the average small order in about 1½-hours. Even the most complicated die can be set in an hour. Speeds are as high as 1120 pieces a minute.

Long and Short—A nine-station die, for example, turns out 48 clothes closet rod brackets a minute. Made from commercial steel coil stock, the brackets are discs 2⅜-in. in diameter, with a semicircular flap to support the rod. Three holes are punched in the outer flange. This job consisted of 5000 pieces; it was set up and run off in about 3 hours.

The same 50-ton dieing machine that ran the brackets was used earlier for a one-million piece run of another item. Many runs of this type are made without interruption, except to put in a new coil of stock.

Cuts Operations—A bonus: Progressive dies reduce secondary operations. A C-clamp, one of Judd's big items, is blanked, formed and pierced (and the gripping button is blanked) in a single operation. Secondary operations for the frame are reduced to welding and threading.

The clamps are made in 1, 2 and 3-in. sizes. The frame is produced in two parts on an eight-station die, then welded. The gripping button for the clamp, which fits at the end of the threaded bar, is stamped from the scrap area at the same time that the frame is being formed.



CAR BY POLLOCK

Announcing...the Johnston Corrugated Cinder Pot

with NEW SHORT SUPPORTS

A new design development now makes the famous Johnston Corrugated Cinder Pot even longer-lasting than before. It is the brand new short support, already in use on Johnston pots in the plants of two leading steel producers.

The short supports are coupled to the pot at the same advantageous area as before: near the bottom, where the walls are coolest and strongest. However, instead of hooking over the top rim of the bail ring, the supports bolt into a set of lugs on its bottom surface (see photo). Thus, the pot walls have no opportunity to scrape or bang against the backs of the supports.

The Johnston pots with the new supports have all the other advantages that have led the steel industry to place more than 2000 of them in service. Advantages like curved sidewalls that resist cracking and inward creep ..expansible saw-cut rims that strengthen the pot top...corrugations that expand and contract freely and dissipate heat faster...optional copper bottom-coats that prevent "stickers".

Why not learn more about the reasons behind the strong trend to Johnston Cinder Pots? We will be glad to explain our policy of engineered slag-handling equipment and how it can be applied to your own slag disposal problem. Simply write to...

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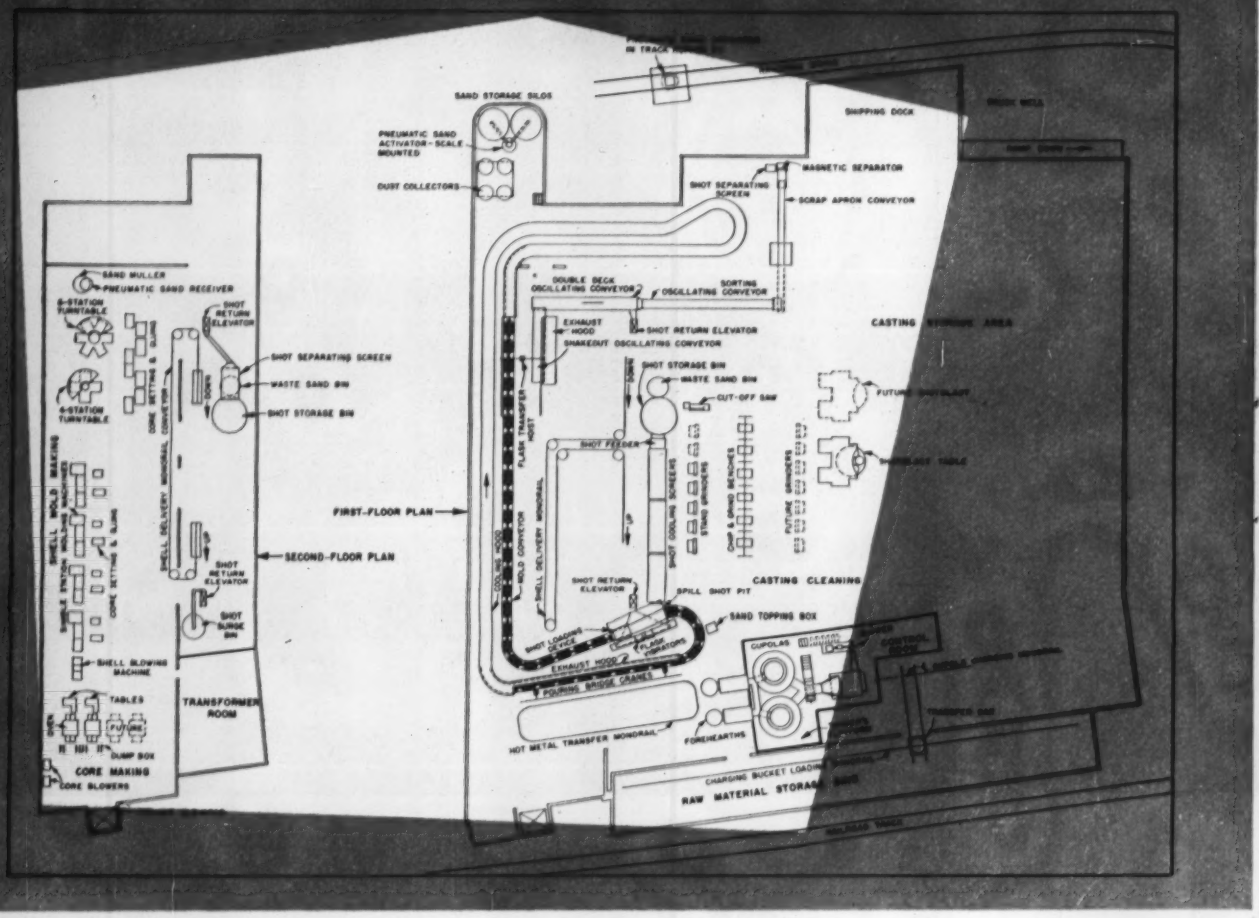


Lynchburg Builds Shell Mold Foundry

TEN TONS of shell mold castings can be made in an hour at Lynchburg Foundry Co.'s new foundry in Lynchburg, Va.

The shell mold department (cost: about $1¾-million) has nearly 60,000 sq ft of space for the exclusive production of shell castings of gray and ductile iron. Castings range from ounces to 275 lb.

Mold Making — Shell making equipment is on the second floor. Included are a six-station and a four-station dump box rotary machine. There are four shuttle dump box machines and a shuttle blow machine used for making both cores and molds.

Here's how the six-station machine works: Each station has a pattern heated to 400-410° F by electrical resistance heaters. Patterns can be identical or different, but must fit on 24 x 30-in. pattern plates.

At the first station the pattern is cleaned and sprayed with a silicone emulsion. The pattern indexes to an infrared preheat oven, which helps to bring the pattern surface — particularly the high points—up to temperature. At the next station the pattern is raised to the bottom of a dump box and a rubber valve drops 8 in. of sand-resin mix onto it.

After 15 seconds, the dump box and pattern are rolled 180 degrees to remove excess mixture from the pattern. The sand goes past the valve. When the pattern and dump box are returned to their original position, the valve holds the sand in the upper part of the box. More sand is fed into the box for the next pattern.

The shell is cured at the next two stations. An oven heats the shell with electrical resistance heaters. An operator removes it at the final station.

Adjustable Cycle — When cope and drag patterns are mounted alternately around the turntable, a shell is made in 40 seconds. The time is cut to 20 seconds when split patterns which have cope and drag patterns on the same plate are used.

The six-station machine is for patterns with deep draws. The four-station machine is the same as the six except that the pattern cleaning and preheat stations are eliminated. The preheat station is

not needed because patterns with shallow draws are used on this machine. Pattern cleaning is done at the shell removal station. Both machines are fully automatic.

Cores—Solid and hollow shell cores are made on two standard coreblowing machines and on two dump box units. The blowing machines are adapted for blowing dry, coated sand by inserting a slitted rubber diaphragm behind the blowplate. Heated metal coreboxes are used. Hollow cores are made by inverting the boxes after the blow.

Assembly—Cores, if needed, are placed in the drag and the shell is placed in a bonding machine. Resin is put on the drag and two wire hooks used in later shot backing operations are set into grooves provided for them at the top edge of the mold half. The cope is set on the drag, and the bonding machine is closed by an air cylinder. Pressure is released, and the mold is put on an overhead monorail conveyor that moves it down to the first floor for pouring.

Sand—Sand for the shells is of 120-130 AFS fineness. It comes to the foundry in covered hopper cars and is stored in two 100-ton capacity silos.

Discharge devices developed by Lynchburg engineers blend the sand as it leaves the silos; this reverses the segregation of grain sizes that occurs during handling. Sand is taken to the muller by a pneumatic delivery system.

A liquid dust suppressant (0.1 per cent) is added at the muller. The resin addition is 6 per cent.

After a 15-minute mixing cycle the muller dumps the sand into a 1000-lb capacity cone-bottom bucket. The bucket is taken to a shell machine where it is raised and moved over a stationary hopper where the sand is dumped.

Melting Iron—Two cupolas supply metal. They are acid lined (to 48 in. ID) and operated on alternate days. Air is supplied by an independently fired blast heater that maintains a pressure of 18 to 22 psi. Tapping temperatures are 2900 to 2950° F for gray iron, 2950 to 3000° F for ductile iron. The high tapping temperatures are needed because of the treatment of the iron before pouring. In the forehearth, sulphur content is reduced by injecting finely divided calcium carbide (carried by a stream of nitrogen gas) through a tube that goes under the surface of the metal. Mechanical slag rabbles remove dry, granular slag from the metal.

Ladles ride on an overhead monorail. A floating section suspended on a scale makes addition of alloys to the bull ladles accurate. Bull ladles distribute metal to the pouring ladles.

Shot and Shells—The monorail conveyor that carries assembled shells from the second to the first floor is unloaded near a car conveyor containing 167 cars. The shells are placed into flasks on the conveyor or in storage racks.

An average of five shell molds are placed in each flask. The hook ends are up and pointing in the same direction. Metal rods placed under the hooks allow the space between the molds to be equalized. A trough is placed over the mold pouring basins to protect them at the next operation.

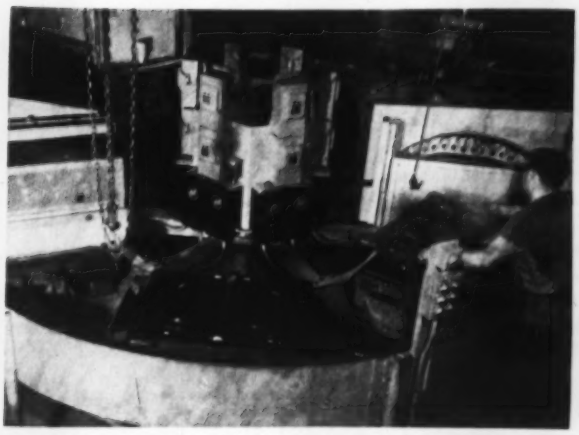
The conveyor goes to an automatic device for loading number 990 shot into the flasks. Just past the shot loading machine the metal rods and hangers used to hang the molds in the flask are removed by hand. More shot is added manually with a rubber hose and the flasks go to a vibrator that settles the shot.

Just before pouring, the flasks are topped with sand to prevent any spilled metal from ruining the shot. Four men do the pouring.

After Pouring — Molds travel through a 340-ft exhaust tunnel. At an average conveyor speed of 5 fpm, the castings cool 68 minutes before shakeout. The mold conveyor has a speed range of 2 to 10 fpm. Its speed is set in inverse relationship to casting weight for constant production tonnage.

After cooling, flasks are lifted to an oscillating conveyor shakeout. A catch holding the bottom of the flask is released and the flask is raised gradually. Shot, shell molds and castings slide slowly onto the conveyor. A hood over the shakeout removes smoke and fumes.

A series of oscillating conveyors separates castings, shot, sand and the broken shell molds. The shot is cooled before it is used again.

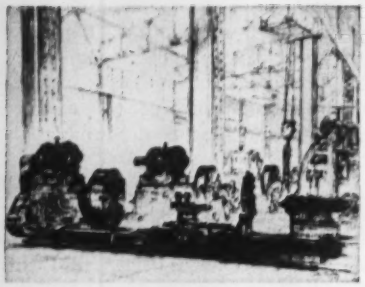


Six-station machine can make three shells a minute

Trough protects the pouring basins during shot filling

Don't junk your old lathe just because it has begun to chatter and shake.

Now is the time to have your outdated machine tools returned to their original performance levels through Simmons Engineered Rebuilding—at half the cost of new equipment.



Engineered Rebuilding by Simmons *unconditionally guarantees* that your machine tools will equal or exceed manufacturers' original specifications.

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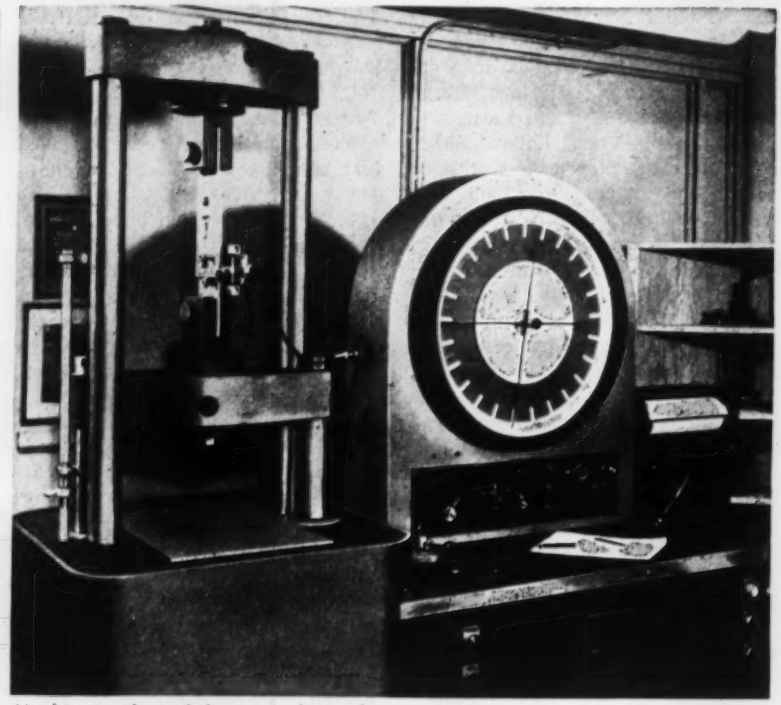


Machines adapted for extra-long shear specimens . . .

Speed Testing for Aircraft Fasteners

SHEAR TESTS of rivets and riveted joints, recorded rapidly under simulated service conditions set up by the Hi-Shear Rivet Tool Co., Los Angeles, are showing how to meet and exceed the rigid requirements of the aircraft industry for high-strength fasteners.

Test specimens required a specially built testing machine with 60 per cent more than standard vertical testing space. A hydraulically operated Baldwin-Lima-Hamilton 60-H universal machine of 60,000-lb capacity, with load pacing equipment and Microformer type stress-strain recorder, was selected.

Quick Answers — It provides stress-strain curves which are plotted automatically on a strip chart as increasing shear loads are applied on rivets in long, double-riveted specimens. Curves can be plotted automatically at the rate of one every 3 minutes.

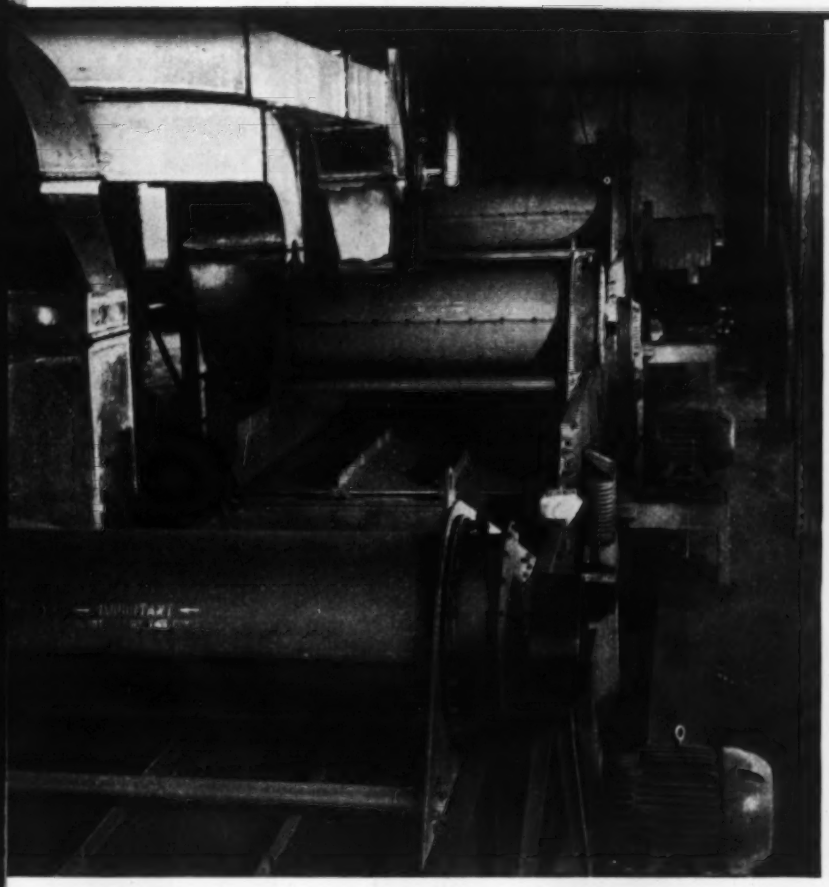
Miniature variable transformers in an extensometer attachment provide the high magnification and accuracy needed in studies of joint performance up to the yield point of various materials. Rates of applying load can be held constant. The machine also will perform shear tests under compression loading.

Fatigue Tests—Similar simplicity of testing has been provided for fatigue tests of bolts in a Baldwin - Lima - Hamilton—Sonntag fatigue machine of 10,000-lb capacity. Fatigue tests are made to compare materials in fastener shapes and to guard against points of stress concentration or flaws in material caused by processing.

Present practice is to apply fatigue loads that are a comparatively high fraction of the yield point. The Sonntag machine maintains a constant load at 1800 cycles per minute. Results are compared with those obtained with bolts long standard for aircraft use.

One feature of these tests is the use of two specially designed holding fixtures which fall apart when a bolt fails so that it is not damaged further. It includes two special steel cups and a retaining nut. The bolt is installed only finger tight for testing in the machine.

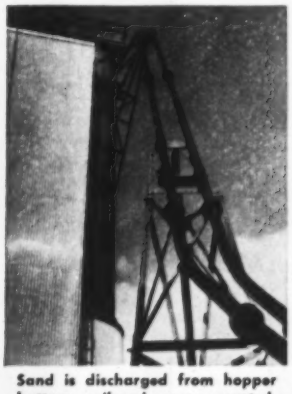
(Advertisement)



HOW LYNCHBURG FOUNDRY USED PROFESSIONAL ENGINEERING TO SOLVE HIGH-VOLUME PRODUCTION PROBLEMS AT INDUSTRY'S NEWEST, MOST MODERN SHELL MOLDING PLANT

NEW FACILITIES ENGINEERED BY GIFFELS & VALLET PRODUCE 100 TONS OF FINISHED CASTINGS IN 24 HOURS!

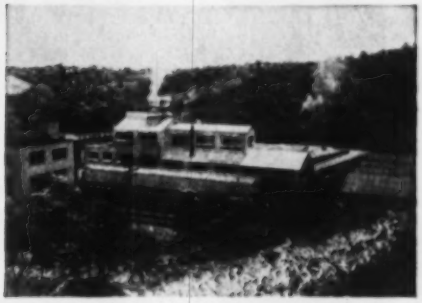
The Lynchburg Foundry Company's new shell molding plant was built to produce large quantities of close tolerance, fine finish castings. Although shell molding is highly adaptable to mechanized operations and offers many other advantages, the planning and engineering for an installation of this size posed many new problems.



Sand is discharged from hopper bottom railroad cars, aerated, and delivered to storage silos pneumatically.

As the project progressed, the extensive facilities of both organizations were coordinated on all phases of design, engineering, equipment specification and construction. In many instances, G & V's background of experience in other industries proved of great value. Two specific examples of this were the methods used to handle the extremely fine molding sand, and the large quantities of iron shot used for shell backup.

The major sand handling problems were to control dust, prevent segregation, and introduce complete mechanization. 100 tons of dry sand with an average AFS fineness of 120 are used per 24-hour day. The sand is removed from box cars into storage silos, batched, and transported to the mullers by a completely enclosed pneumatic handling system. A specially designed cone, orifice and air slide at the base of each storage silo reverses the segregating effect of the sand entering the silo. Batches for the mullers are accurately measured by a unique electronic weighing instrument. This new sand handling system keeps dust and segregation at a minimum, and is similar to the modern mechanized methods employed in the bulk handling of cement, flour, and other dry materials.



Completed plant, looking toward the cupolas.

About 125 tons per hour of shot must be separated from the castings, then cooled and cleansed of sand. This is accomplished by a series of vibrating screens constructed of heavy-duty stainless steel cloth. Air exhausted through the screen at the rate of 150 CFM per square ft. cools the shot from above 300° to below 150°. The screen is designed so that air pull is equal at every point on its surface. Rate of travel and depth of the shot bed can be readily adjusted to meet varying requirements. All transfer points in the system are provided with a "stone box" so that the highly abrasive shot falls upon other shot, rather than abrading the chutes themselves. This method was adapted from similar applications in the cement and rock products industry.

Heavy duty vibrating screens air cool and clean the shot without the use of water.

These are but several examples of the many ways in which Giffels & Vallet's comprehensive planning-engineering services have pointed the way to greater output, lower costs and improved casting quality for the foundry industry. These services are discussed in a special Foundry Brochure. A copy will be mailed on request.

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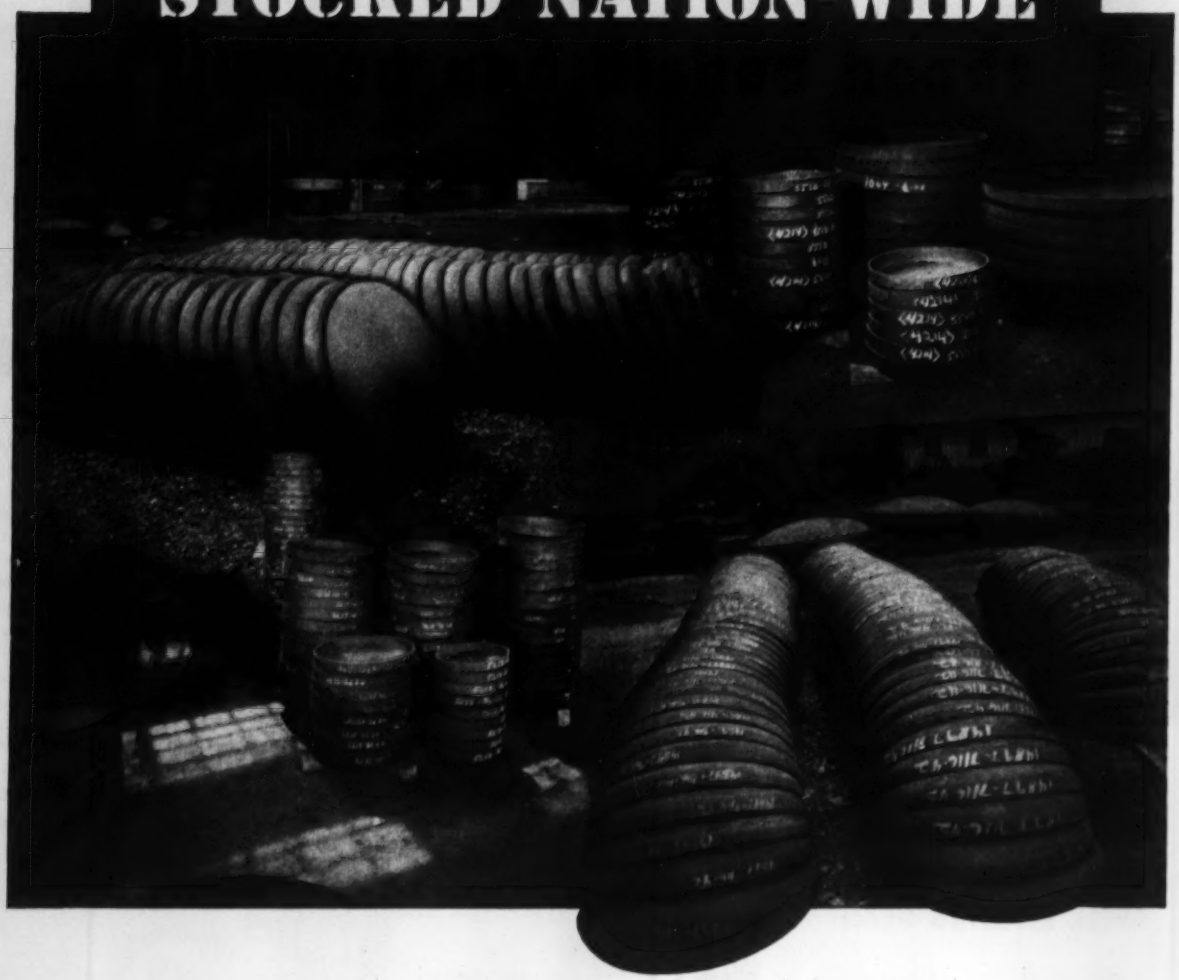

Stocked at CF&I warehouses throughout the country, Claymont Flanged and Dished Heads are always conveniently and promptly available —in standard and ASME types.

Claymont Flanged and Dished Heads are stocked in sizes from 18 inches to 8 feet in overall diameter, and in gauges from 3/16 inch to 5/8 inch. Supplied from carbon steel.

We are also prepared to handle head-forming operations on both ferrous and non-ferrous metal supplied by the customer. To order, contact our nearest sales office or write direct to Wickwire Spencer Steel Division, The Colorado Fuel and Iron Corporation, P. O. Box 1951, Wilmington, Delaware.

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Gamma Ray Projector Takes a 360-Degree Picture

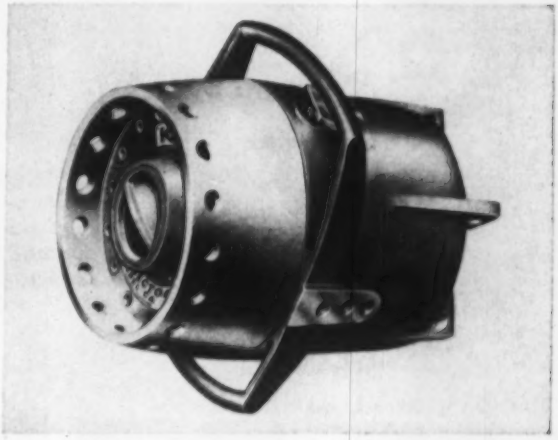
This projector is a time saver. On one job it took 160 pictures in 2 hours and 45 minutes.

To take radiographs of welds in tanks, segments of conventional x-ray film are placed on the outside of the tank in a special continuous belt. The projector is placed inside.

The portable projector is safe, needs no electricity or control board. Maintenance is confined to replenishment of the radioisotope.

Lead shields the projector; wall thickness depends on the strength of the isotope used. A lensless shutter can be opened and closed remotely.

The projector is charged in a radioisotope laboratory. There are three models, 75, 250 and 2900 lb. *Write*: Metal & Thermit Corp., 100 E. 42nd St., New York, N. Y. *Phone*: Oxford 7-0800



Semiautomatic Grinder Handles Billets

This new billet grinder promises big production increases over previous methods.

It will handle 8-ft long billets from 2½ up to 6 in. square. Other grinders are being designed for slabs and for larger billets.

Much of the production increase is due to speedy handling. After billets are placed on skids by crane operators, they are machine handled. Handling is controlled by an operator seated in the pulpit, fully protected by safety glass.

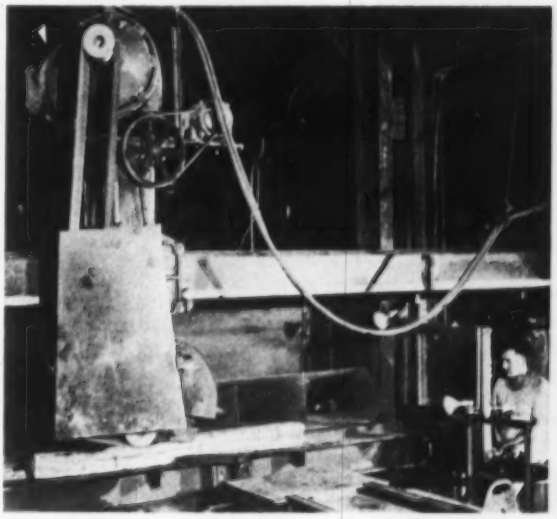
Billets are fed mechanically to a manipulator table where the operator automatically clamps the billet, tumbles it from side to side or edge to edge and discharges it.

A continuous and uniform downward pressure is exerted by the grinder. The amount of downward pressure is adjustable.

This downward pressure, in addition to producing uniformly good work, insures that the operator will grind the billet down to the bright metal where it is possible to detect flaws. The amount of stock to be removed can be varied to suit the user's needs.

The grinding wheel is set at an angle of about 30 degrees to the work. This gives a wider surface of contact per pass and enables the wheel to climb back up on the work after it passes off the end of the billet. The wheel has a diameter of 20-in. and a 4-in. face.

To insure constant contact of the wheel with the work, even when there are substantial surface irregularities in the billet, the grinding wheel is set ½-in. below the billet surface. As the grinding wheel floats over the billet, hydraulic snubbers control vertical movement.



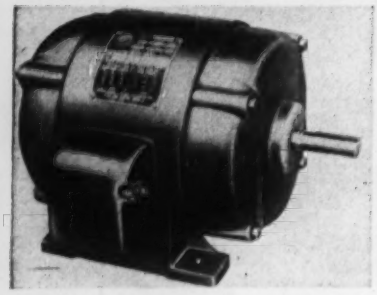
The first standard production model is the No. 1 billet grinder. It is powered by a 40-hp motor. Travel is obtained by a gear reduction unit and integral fluid coupling powered by a 1½-hp, a-c motor.

While travel on the No. 1 grinder is standardized for 8-ft billets, other models can be built to customer specifications. *Write*: Lewis Machinery Division, Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa. *Phone*: Atlantic 1-5700

NEW PRODUCTS and equipment

Industrial Motors

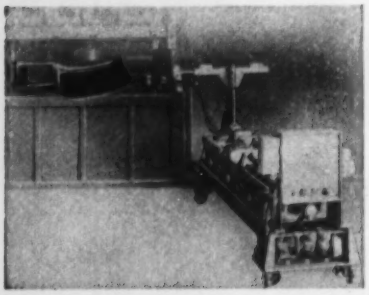
Here is a new line built to the new rerated NEMA standards. Greater horsepower ratings come in a smaller package; efficiency is increased with a reduction in weight. Double-end ventilation is given by dual-cast aluminum fans. The new line goes up to 30 hp.



Lima continues to make its regular line of NEMA motors (½ to 150 hp). *Write*: Lima Electric Motor Co., 136 Findlay Rd., Lima, O. *Phone*: 29610

Automation Press Hand

This new press hand pulls parts from a die press at a rate of up to 30 strokes a minute. Adaptable to job shops, it can be moved from one press to another.

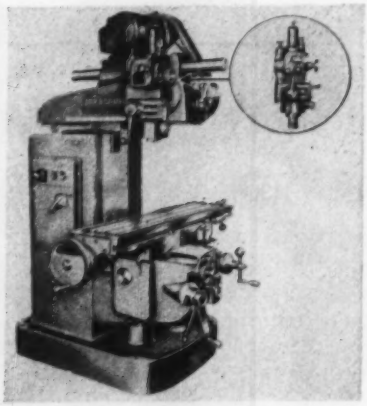


Special clearances to facilitate handling are not needed. There are three sizes, with strokes of 24, 36 and 49 in. *Write*: Hamilton Automation Inc., 1490 Edison Ave., Hamilton, O. *Phone*: 2-4581

Milling Machine

This tool has an adjustable cutter head that permits horizontal, angular and vertical milling, plus boring and drilling on one machine.

The cutter head has a 4-in. quill travel and eight spindle speeds—

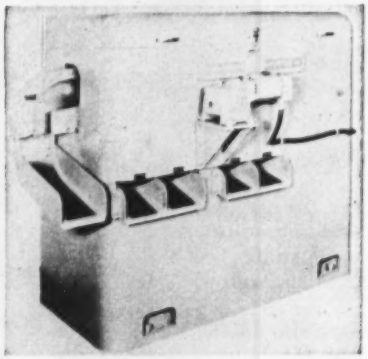


from 110 to 3600 rpm. The cutter head has a 2-hp motor.

Table size is 10 x 40½-in. Travel is 22 in.; crossfeed is 10 in. *Write*: Van Norman Co., 3600 Main St., Springfield, Mass. *Phone*: Republic 7-4721

Gear Checker

Spur or helical gears are checked for three variables in tooth dimensions. Electronic indicators and a master gear inspect for incomplete



stroke, oversize or undersize teeth and thick or thin ones. Gears not O.K. go to chutes that sort them by defect. *Write*: National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. *Phone*: Walnut 1-8980

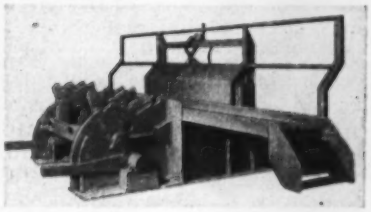
Primer Removal

Here is a two-phase solvent for removing zinc chromate primers from aluminum. It has a flash point of 290°F and works faster when heated to 140 to 180°F. A pressure water rinse is recommended to float off the loosened paint. *Write*: Oakite Products Inc., 134E Rector St., New York 6, N. Y. *Phone*: Whitehall 3-0940

Bloom Turner

This machine makes the turning of billets for inspection or scarfing quick, easy and safe. Powered by a 15-hp motor, the turner is made of heavy steel plate and structural shapes.

It will handle regular mill lengths of square or rectangular sections where the greater dimension does not exceed the lesser by more than a few inches. Capacities: Three 4-in. square pieces, or three rectangular pieces 4 in. on their longest side; two rectangular pieces 6 to 7½-in. on their longest



side; or one square piece 8 to 12 in., or one rectangular piece 8 to 12 in. on its longest side. *Write*: Evans Enterprises, Massillon, O. *Phone*: Temple 2-7074

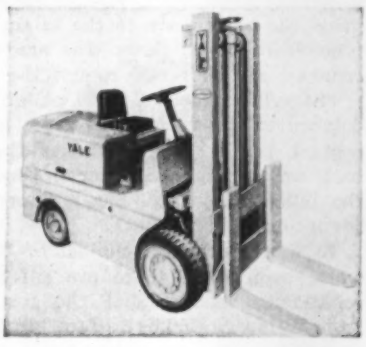
Strapping

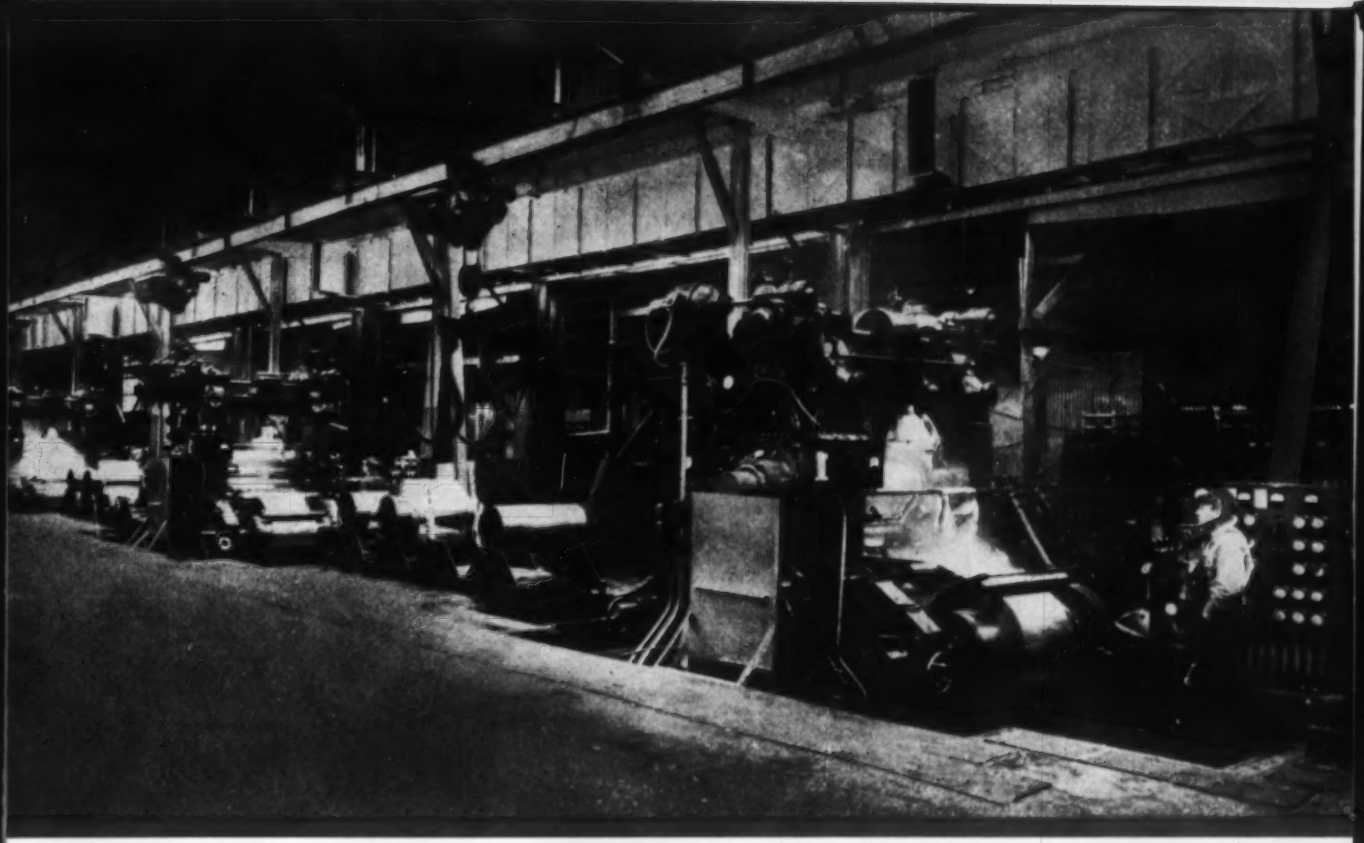
A banding strap with a curved edge is ideal for paper rolls and similar products. It is available in ⅜-in. widths in 0.020 gage steel. *Write*: Allegheny Steel Band Co., Box 716, Pittsburgh 30, Pa. *Phone*: Walnut 1-7100

Lift Trucks

A new series of industrial lift trucks features fully automatic gear shifts. Faster, smoother materials handling is combined with greater operator comfort and safety.

All trucks—gasoline, diesel and





battery of 9" and 21" x 44" Lewis four-high Foil Mills

. . . high production mills roll foil at speeds up to 4000 fpm

Whether you want to start with an ingot from a hot mill or start with coils, you can get a full range of Lewis equipment, designed and built to meet your specific requirements. Over one hundred modern Lewis Foil Mills, for example, are now successfully operating in plants of the country's top ranking aluminum foil producers.

Built in various sizes and widths to meet individual customer requirements, these Lewis Foil Mills include the latest design in bearings, electric tension control, thermal control and handling equipment. They usually start with .030" or .026" sheet and can reduce down to .00025" . . . at speeds ranging from 1000 to 4000 feet per minute.

So call us in the next time you're in the market for a mill to roll aluminum. Our engineers, who have had extensive experience in the development of high speed mills, will study your requirements with you. This experience plus modern manufacturing facilities will assure you of getting the type of equipment best suited to your specific needs.

LEWIS four-high FOIL MILL

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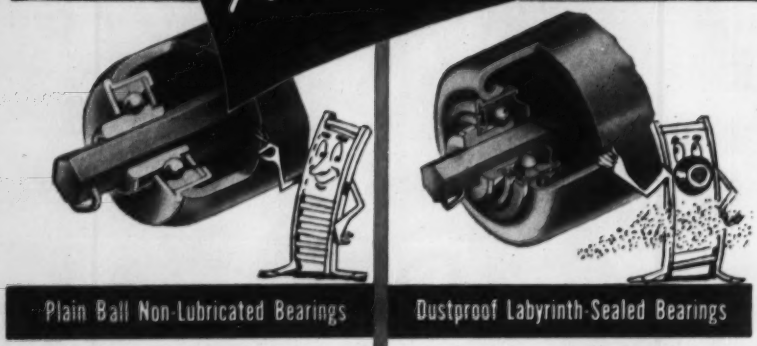
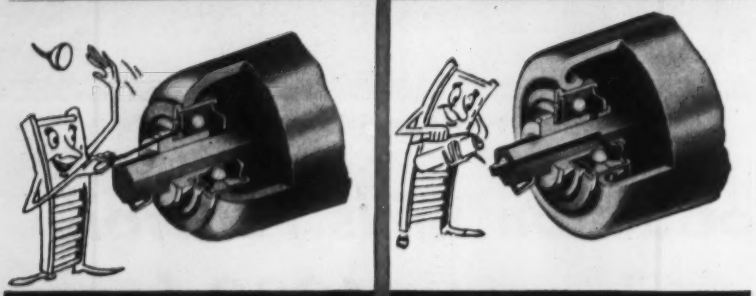
BUSCHMAN ROLLER CONVEYORS Feature:



Plain Ball Non-Lubricated Bearings | Dustproof Labyrinth-Sealed Bearings



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In roller conveyors, it's the bearing that counts! And BUSCHMAN conveyors use only performance-proven bearings... engineered for long life and trouble-free operation in every type of service. No matter what normal operating conditions may be, BUSCHMAN has a conveyor pre-engineered to meet your needs.

Conveyors are available with various types of rollers and frames, in different sizes and spacings, and in any width from 6 inches on up. BUSCHMAN can supply 45° and 90° curved sections, switches, spurs, work stations and other components to provide a complete, efficient materials handling system.

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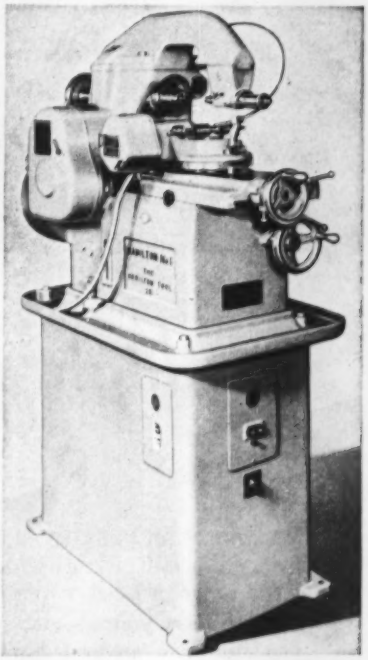
NEW PRODUCTS and equipment

LP-gas powered—are available with torque converter transmissions.

The trucks have inching control. *Write*: Yale Materials Handling Division, Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa. *Phone*: Orchard 3-1200

Hobbing Machine

Independent selection of speeds, feeds and indexing is offered by this small gear, precision hobber. It adapts to existing tooling re-



gardless of the style or make of machine for which it was made. *Write*: Hamilton Tool Co., Hamilton 4, O. *Phone*: 4-8358

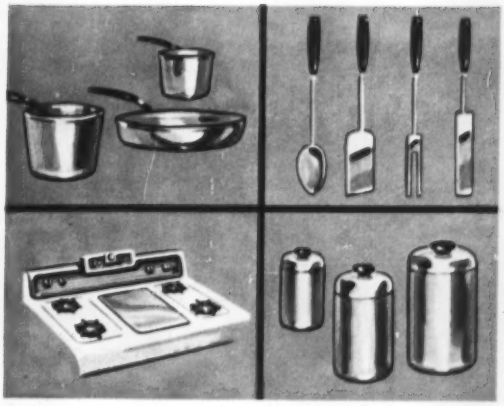
Straightener and Polisher

This machine polishes as it straightens bars and tubes at high production speeds. It is available in several size ranges.

A typical model handles cold-drawn steel bars from ⅞ to 2½-in. in diameter at speeds up to 300 fpm. Other materials: High and low carbon steels, bessemer grades and alloys.

Power: An adjustable-speed, direct-current motor—30/40 hp, 400/1600 rpm, 230 volts. All controls

modern design specifies stainless steel



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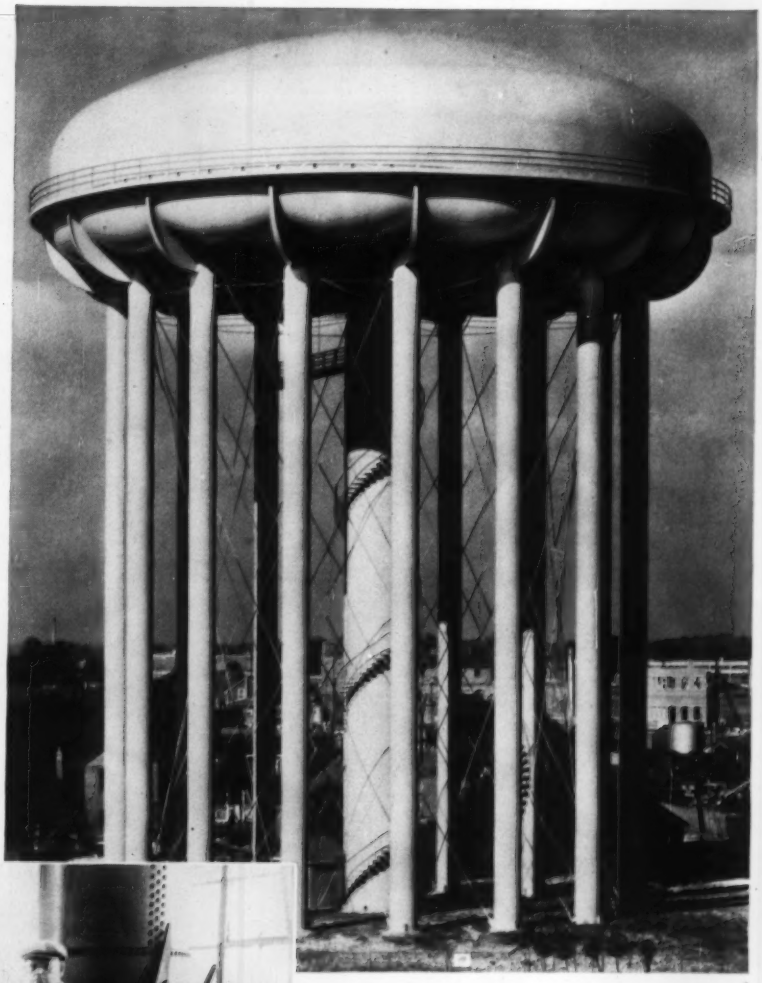
MONUMENT

TO PRECISION METAL FABRICATION

This 104-ft. diameter radial cone bottom elevated tank is indeed a monument to the engineering and fabricating ability of Horton Steel Works, Ltd., Fort Erie, Ontario. The huge structural members, including a framework of angle-iron rings for the tank roof, were precut and formed in the Horton shops to fractional-inch tolerances for on-site assembly.

The rings, which are welded to the underside of the roof plate, were accurately and rapidly shaped to the curve of the roof by "Buffalo" Bending Rolls like the one shown below. Horton uses one of these machines in its Fort Erie plant to form the curved angles used in Horton tanks.

If you bend structurals, do it the accurate, high-speed way used by industrial leaders — with "Buffalo" Bending Rolls.



"Buffalo" BENDING ROLLS

— like this No. 3 Horizontal Roll at the Horton plant, turn out commercially perfect circles, spirals, arcs and other shapes from most structurals, at production-line speeds. A full range of "Buffalo" Horizontal and Vertical Bending Rolls is available for your heavy structural forming — while "Buffalo" Pinch-Type and OA Aircraft Type Rolls are ready to cut your costs on bending light members. Write today for Bulletins 3344-A and 352-C.

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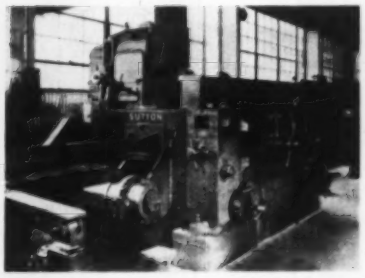

are readily accessible; change over from one size to another is quick. *Write*: Sutton Engineering Co., First National Bank Bldg., Pittsburgh 22, Pa. *Phone*: Grant 1-8077

Carbide Tools

Two new steel-cutting carbide grades, CA-606 and CA-609, offer greater edge wear without loss of shock resistance.

Grade 609 is for machining cuts over ¼-in. and where more resistance to wear is needed.

CA-606 has high resistance to edge wear, as well as greater resistance to heat. It is especially useful where machining tolerances must be held. *Write*: Carmet Division, Allegheny Ludlum Steel Corp., Pittsburgh 22, Pa. *Phone*: Grant 1-1085

Slug Caster

Aluminum slugs for forging or impact extrusion are made automatically from ingot metal by this caster. Slugs are produced directly from a melting furnace.

The machine has a pan and a

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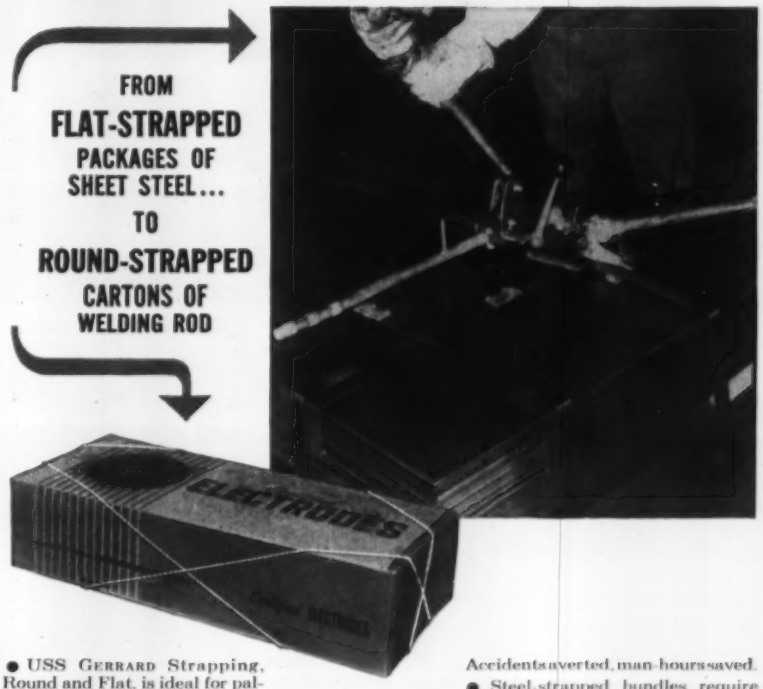

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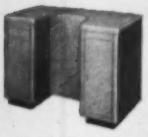
COMPONENT FABRICATION

by KIRK AND BLUM

SMALL MILLER PEDESTAL

GUARDS

CARBIDE GRINDER BASE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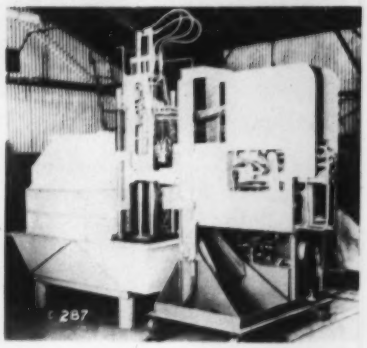
water-cooled mold, both of which enter the well of the furnace. Aluminum enters the mold through a gate in the pan and is ejected after solidification. Changing



molds to make different size slugs takes only a few hours. *Write*: Stroman Furnace & Engineering Co., Franklin Park, Ill. *Phone*: Gladstone 5-2412

Variable-Speed Pulley

Speed ratios up to 2:1 are delivered by this ¼-hp pulley. It is suited for limited space applications.

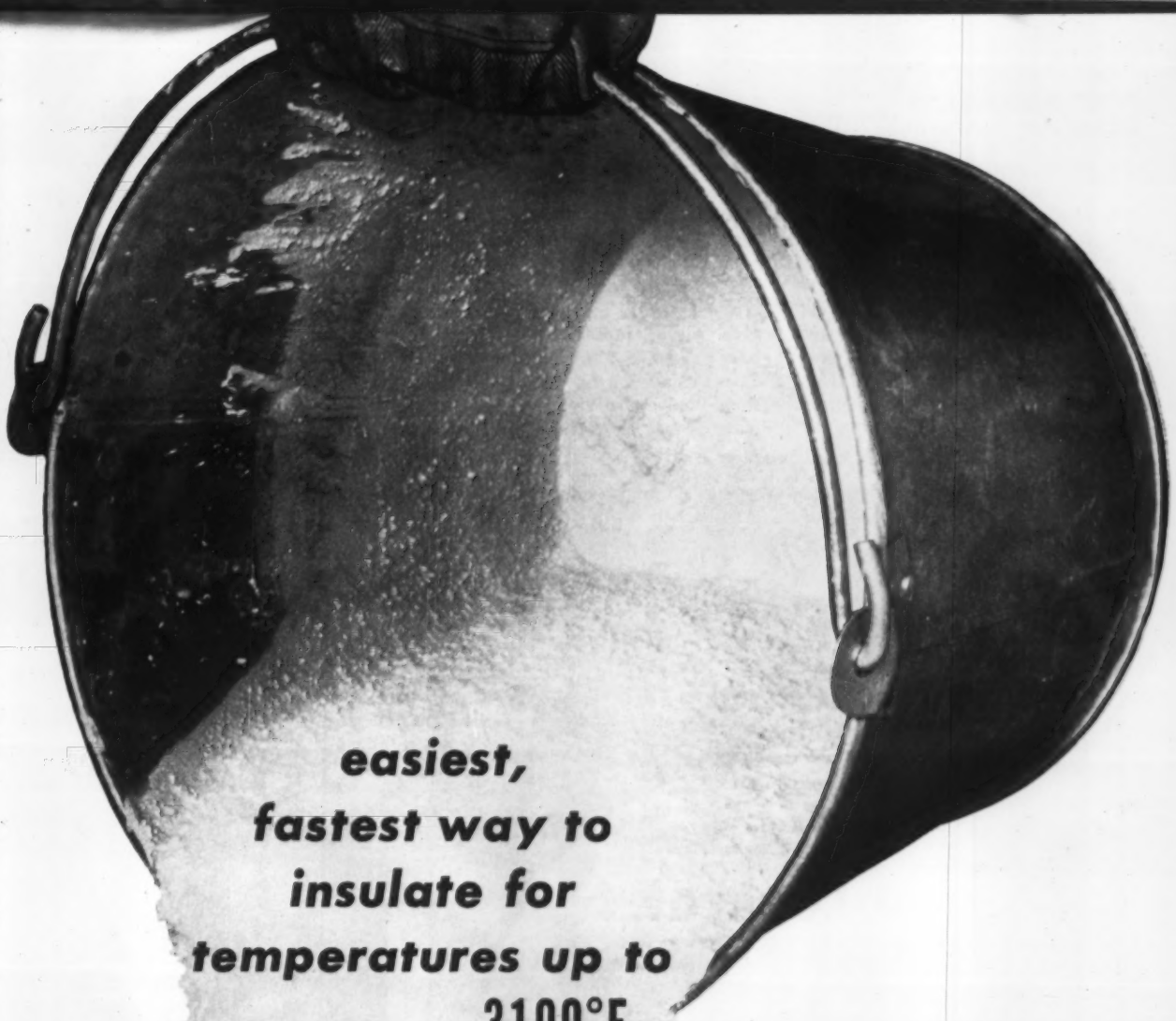
Smooth belt surfaces reduce wear and add to quietness of operation. An A-section belt is used.

Bronze, oil-impregnated bearings eliminate the need for lubrication. The pulley is 3⅛-in. long and 3 in. in diameter. *Write*: Lovejoy Flexible Coupling Co., 4871 W. Lake St., Chicago 44, Ill. *Phone*: Esterbrook 9-3010

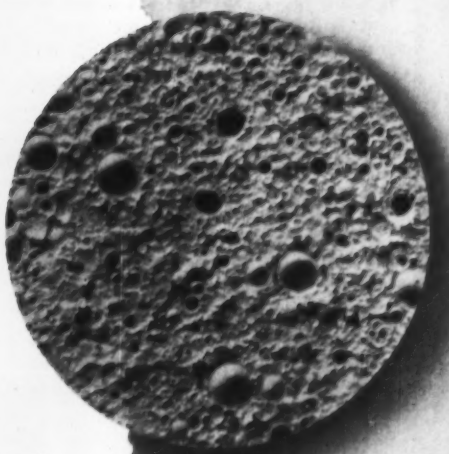
Cutoff Wheels

A faster, cooler cut is given by a new line of aluminum oxide resinoid cutoff wheels. Sharp sides prevent binding in the cut.

Three grades are available for



easiest, fastest way to insulate for temperatures up to 3100°F



Here's why ALFRAX cement insulates so well: A sliced-through section of set cement reveals the secret: dead air space in the thousands of closely-packed bubbles of alumina.

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ALFRAX® castable aluminum oxide cements are just about the most effective insulating materials you can find for temperatures up to 3100°F—and especially so at the upper end of the temperature range. They consist of tiny bubbles of pure alumina held together by a bonding agent.

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So, if you're looking for a castable insulating material to stand really high operating temperatures . . . and keep on standing them through a long, useful life . . . you can end your search right now by writing us for free engineering information on these highly refractory, low heat capacity, easy-to-use cements. Address Refractories Division, The Carborundum Company, Perth Amboy, N. J., Department W105.

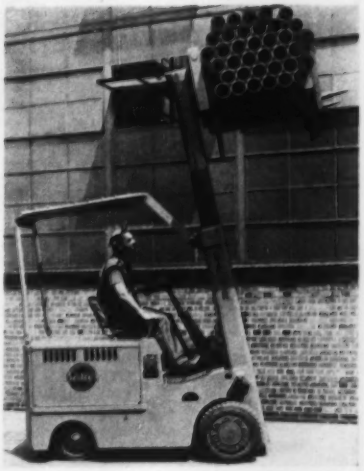
dry metal cutting: "R" for minimum burn and burr; "T" for general-purpose work; and "V" for rough work where maximum wheel life is the most important factor.

Wheel sizes range from 6 to 20 in. in diameter and are 1/16, 3/32 and 1/8-in. thick. All wheels are available in 24 to 120 grit. *Write*: Bonded Abrasives Division, Carborundum Co., Niagara Falls, N. Y. *Phone*: 6631

Fork Trucks

High maneuverability, ease of maintenance and increased operator comfort and convenience are features of a new line of electric fork trucks. Capacities are 3000, 4000 and 6000 lb.

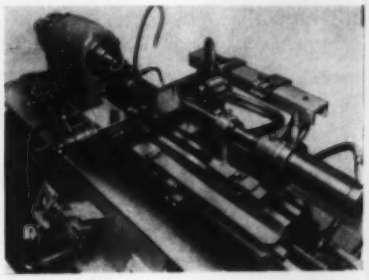
A low center of gravity, increased width and low overhang give high stability. The trucks have no cowl; the operator has a clear view of the load and the floor immediately ahead. The floor plate is free of obstruction. *Write*:



Baker-Raulang Co., 1250 W. 80th St., Cleveland, O. *Phone*: Olympic 1-3000

Tracer Lathe

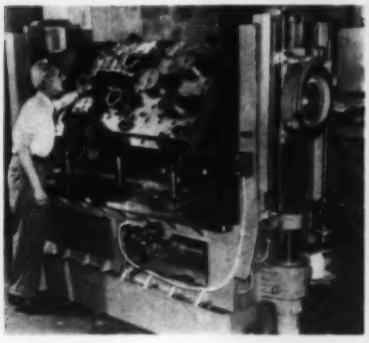
This machine has an 11-in. swing, is 17 in. between centers and has a carriage travel of 13 in. The duplicator crossfeed is 1½-in.

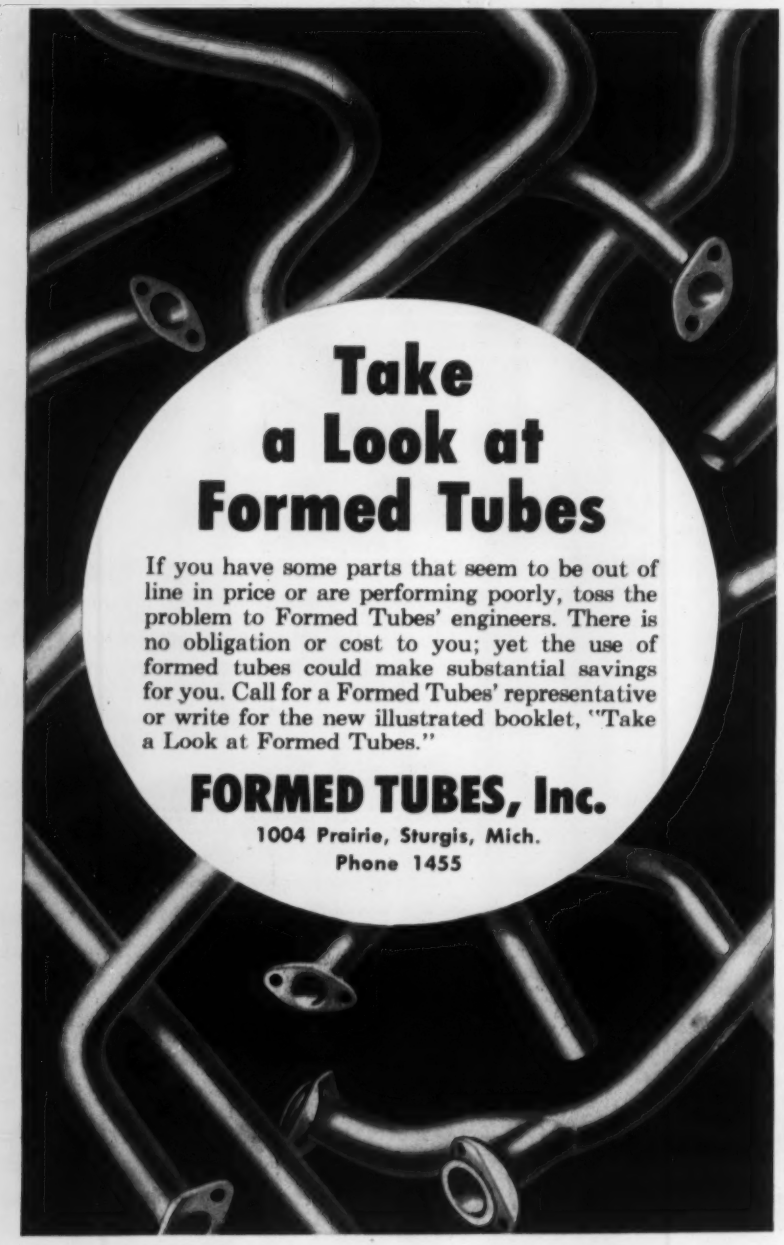


An air-operated collet closer and tailstock work from a single selector valve. *Write*: Elgin Tool Works, 1770 Berteau Ave., Chicago 13, Ill. *Phone*: Bittersweet 8-6100

Die Handler

This new model handles 36 x 75 in. dies or molds which weigh up to 6000 lb. The top platen is raised

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If you have some parts that seem to be out of line in price or are performing poorly, toss the problem to Formed Tubes' engineers. There is no obligation or cost to you; yet the use of formed tubes could make substantial savings for you. Call for a Formed Tubes' representative or write for the new illustrated booklet, "Take a Look at Formed Tubes."
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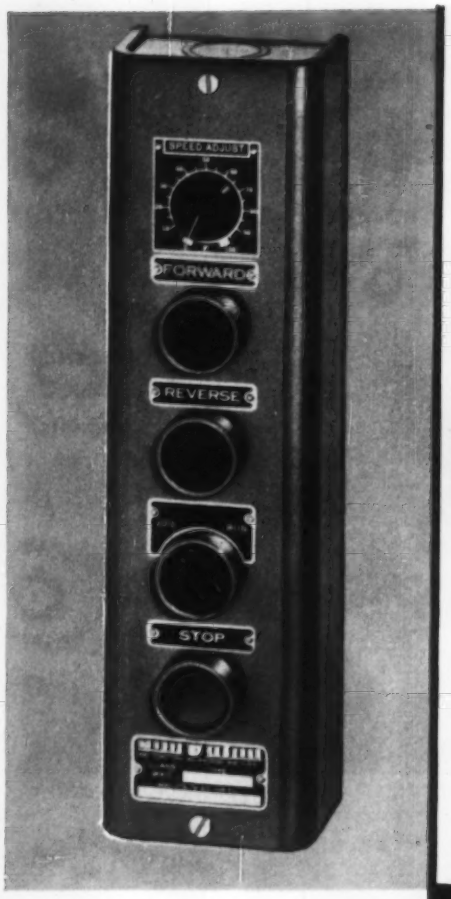

The "Unseen Hand" at the Controls . . .

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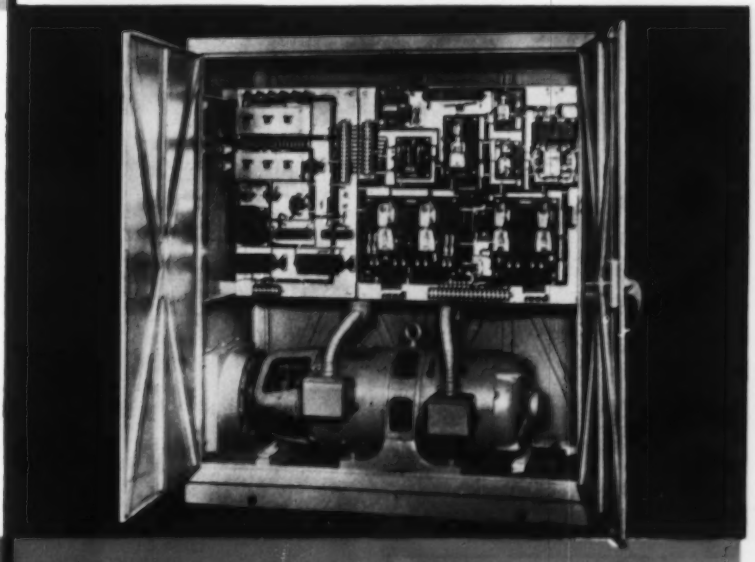
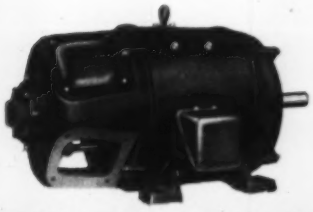
Century SELECTIVE SPEED DRIVE

More accurately than the most experienced operator, Performance-Rated Century Selective Speed Drives *automatically* adjust motor speed to meet operating requirements. Speed changes are integrated with varying pressure, temperature, viscosity or size of the material being worked. You can also use Century Selective Speed Drives for starts, stops and jogs—forward or reverse—as required.



For full information and assistance on any motor drive application, AC or DC, call your nearest Century Sales Office . . . or write us direct.



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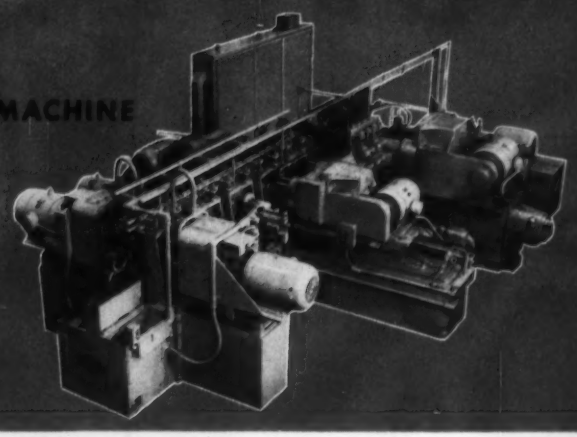
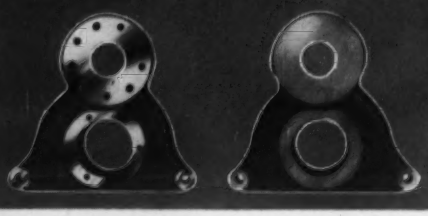
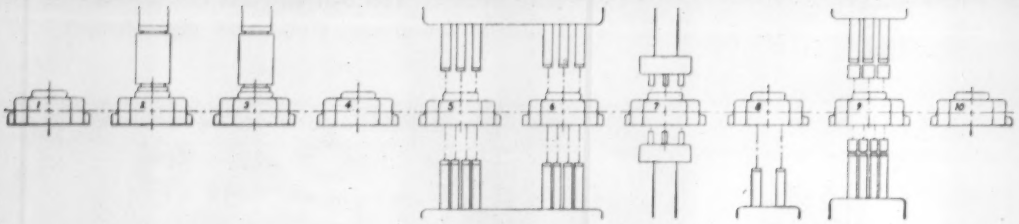


THE PART





THE OPERATIONS

STATION NO. 1
LOAD 1 PART

STATION NO. 2
UNIT NO. 1
COMB. SEMI. FIN. BORE 5.165 & 3.249 & 2.861 DIAS.
COMB. SEMI. FIN. BORE 4.425 THRU BOTH WALLS

STATION NO. 3
UNIT NO. 1
COMB. FIN. BORE 5.180 & 3.264 & 2.876 DIAS.
COMB. FIN. BORE 4.440 THRU BOTH WALLS

STATION NO. 4
IDLE

STATION NO. 5
UNIT NO. 2 "U" DRILL 5 HOLES
31/64 DRILL 6 HOLES

UNIT NO. 3 31/64 DRILL 8 HOLES
21/32 DRILL 1 HOLE
"U" DRILL 6 HOLES
23/32 DRILL 1 HOLE

STATION NO. 6
UNIT NO. 2 ½ CHAMFER 5 HOLES
⅝ CHAMFER 6 HOLES

UNIT NO. 3 ⅝ CHAMFER 7 HOLES
13/16 CHAMFER 1 HOLE
½ CHAMFER 6 HOLES
23/32 DRILL 1 HOLE
COMB. COUNTERBORE
.796 & CHAMFER 1 HOLE

STATION NO. 7
INSPECTION

STATION NO. 8
UNIT NO. 4
.6910 REAM 1 HOLE
.8157 COUNTERBORE 1 HOLE

STATION NO. 9
UNIT NO. 5 7/16-14 N.C. TAP 5 HOLES
9/16-12 N.C. TAP 6 HOLES

UNIT NO. 6 7/16-14 N.C. TAP 6 HOLES
9/16-12 N.C. TAP 7 HOLES
½-14 N.P.T. TAP 2 HOLES

STATION NO. 10
UNLOAD 1 PART

Whatever Your Specific Job Problem, Consult Baker Engineers. Write

BAKER BROTHERS, INC., TOLEDO, OHIO

DRILLING • TAPPING • KEYSEATING • CONTOUR GRINDING MACHINES

and lowered with heavy precision lead screws driven by a 2-hp electric motor. Fine adjustments in position can be made with an auxiliary hand crank.

The platen can be rotated by a ¾-hp electric motor or by a hand crank. *Write*: Hansford Mfg. Co., 1239 University Ave., Rochester 7, N. Y. *Phone*: Greenfield 3660

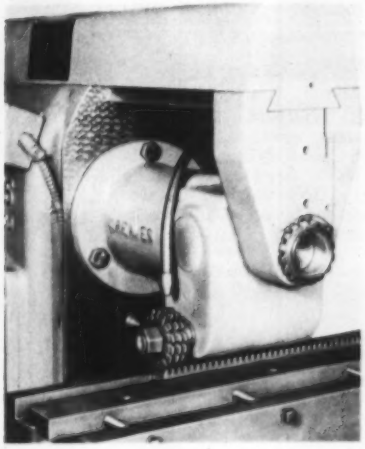
Mold Spray

Lengthy torching and tunnel oven drying of foundry molds are eliminated by a new mold spray, Ignicoat. By mixing it with isopropyl alcohol and igniting, molds can be closed after a short burning time. Fuel, maintenance and drying equipment expenses are eliminated.

The coating can be sprayed, brushed or swabbed. It produces smooth castings. *Write*: Frederic B. Stevens Inc., 1800 18th St., Detroit 16, Mich. *Phone*: Tashmo 5-0725

Rack Milling

This head for the Greaves horizontal milling machine makes possible many types of crossmilling, including racks on long workpieces.



The unit mounts on the column face of the machine. It operates at the spindle speeds of the machine. *Write*: Greaves Machine Tool Division, J. A. Fay & Egan Co., 2011 Eastern Ave., Cincinnati, O. *Phone*: Plaza 1-0730

NEW literature

Write directly to the company for a copy

Publication File

Here is a list of publications on instruments and controls for industrial and power plants, heat treating furnaces and instruments for research, teaching and testing—booklet ENT (1), 24 pages. Leeds & Northrup Co, 4901 Stenton Ave., Philadelphia 44, Pa.

Threading Machines

Data for automatic nipple threading machines are given—bulletin D-85-1, 10 pages. Landis Machine Co., Waynesboro, Pa.

Heating Elements

Charts, tables and drawings explain electric heating elements of tubular, strip, water and oil-immersion types—publication EC-53, 24 pages. Cutler-Hammer Inc., 320 N. 12th St., Milwaukee, Wis.

Machining and Inspection

Gaging machines for inprocess and final inspection are described—circular 592, 12 pages. Features of comparators are illustrated — circular 586, 24 pages. Features and tooling of two turret lathes are described—bulletin 158, 12 pages and bulletin 159, 12 pages. Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford 1, Conn.

Gear Making

Described are representative models of gear shaving machines, gear inspection equipment, gear lapping machines, gear grinding machines, broaches and broaching fixtures—bulletin AP55-8, 16 pages. National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich.

Three-Dimensional Cams

The development of cams from theory to finished product is presented—4 pages. Cam Division, Parker Stamp Works Inc., Franklin Ave., Hartford, Conn.

Color Anodizing

Presented are recent developments in color anodizing aluminum—Technical Adviser 31, 4 pages. Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

Milling Machines

Design highlights of dial-type units are presented—publication M-1915, 16 pages. Cincinnati Milling Machine Co., Cincinnati 9, O.

Pneumatic Silencers

Metal units that eliminate noise shock from air-operated equipment are covered—4 pages. C. W. Morris Co., 10628 Cloverdale, Detroit 4, Mich.

Sling Chains

Here is a reference book for the buyer and user of sling chains—data book 100, 32 pages. Columbus McKinnon Chain Corp., Tonawanda, N. Y.

Presses

Double crank presses in open back and upright models are featured—bulletin 65C, 26 pages. Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N. Y.

Fire-Resistant Fluid

Pydraul F-9, a fluid for hydraulic equipment operating near possible sources of ignition, is described—19 pages. Organic Chemicals Division, Monsanto Chemical Co., St. Louis 1, Mo.

Super Refractories

Properties and uses of sillimanite-type and bonded mullite high-temperature refractories are covered—bulletin 318, 7 pages. Chas. Taylor Sons Co., subsidiary of National Lead Co., Cincinnati, O.

Instruments

Schematic drawings show how instrumentation is applied in the automatic control of metal processing—bulletin 98261, 12 pages. Taylor Instrument Cos., 95 Ames St., Rochester 1, N. Y.

NEW BOOKS

Forming of Austenitic Chromium-Nickel Stainless Steels, International Nickel Co. Inc., Direct Mail Circulation Section, 67 Wall St., New York 5, N. Y., 394 pages, $5.

This revised and expanded edition gives the minute details on how to form the chromium-nickel stainless steels. Described are new and old processes, including those using only one die. The effect of composition, temper and finish on forming characteristics is explained.

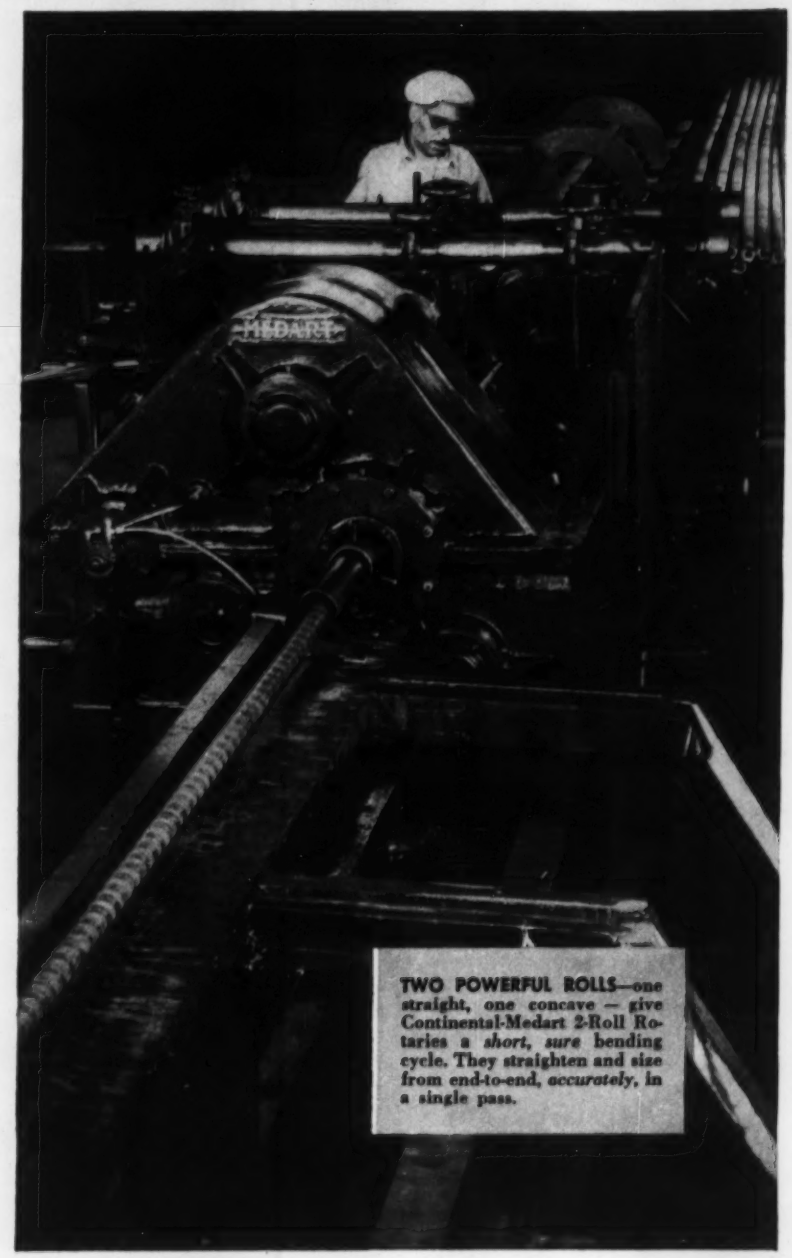
OUTLOOK MARK MARKET OUTLOOK

HOW Crucible Steel Company KEEPS BAR STRAIGHTENING COSTS DOWN

THESE rugged Continental-Medart 2-Roll Rotary Straighteners straighten accurately *from end to end*... simultaneously polish the bars and improve out-of-roundness . . . all in *just one pass.* As a result, Crucible Steel Company, Pittsburgh, Pennsylvania, is able to keep down the cost of straightening quality hot-rolled bars. They have virtually eliminated expensive rehandling and reprocessing. And they get complete automatic operation—bars are fed to and delivered from the machine mechanically. Only one operator is required for each machine.

If you want to save money, follow Crucible's example. Use Continental-Medart Straighteners. Use the 2-roll, single motor machine for straightening and sizing hot-rolled bars, or for sizing or polishing centerless turned bars. Use a Continental-Medart 2 x 2 Universal (two rolls, each driven by a separate motor) to straighten cold-drawn or centerless ground bars at high speed. Use a Continental-Medart Multicycle Straightener (with six rolls and *two cycles* of straightening) to straighten round pipe or tubing at very high speed.

Whatever your straightening requirements, call on Continental-Medart for rugged, dependable equipment and for expert engineering assistance. Continental-Medart manufactures a complete line of cold finishing equipment for processing everything from rough billets to fine wire.



TWO POWERFUL ROLLS—one straight, one concave — give Continental-Medart 2-Roll Rotaries a *short, sure* bending cycle. They straighten and size from end-to-end, *accurately*, in a single pass.

CONTINENTAL Foundry & Machine Company

CONTINENTAL-MEDART

Engineering and Sales Offices: 200 Grant St., Pittsburgh 19, Pa.
General Offices: 4407 Railroad Ave., East Chicago, Ind.
Plants at East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.
Copes-Vulcan Division, Erie, Pa.

STEEL

October 17, 1955

Market Outlook

CONSUMER pressure on the steel mills for position in first quarter rolling schedules is mounting. It begins to look like most buyers are going to be disappointed in the tonnage they will be able to place on mill books for delivery in the period. From all indications, mill acceptances will fall considerably short of consumers' needs.

Although steelmakers are accepting orders in practically all the major products for shipment after the turn of the year, the tonnage available for new commitments is limited by indicated heavy carry-overs at year end. From a month to six weeks of production may have to be blanked out to care for overflow business.

TIGHT SUPPLY—The squeeze is expected to tighten as the fourth quarter advances. Except for limited openings in mill schedules, this quarter's production is about sold out. The stringency is noticeably severe in hot and cold-rolled sheets, hot-rolled bars, structurals and plates. No early relief is in sight.

An encouraging note is provided by heavier shipments of delinquent tonnage (some originally scheduled for July-August). Major suppliers are pushing steel into fabricating plants at a rate that enables manufacturers to maintain operations with less drag on their inventories. This probably explains the relative absence of distress manufacturing cutbacks.

INVENTORIES—The belief prevails in market circles that consumers' inventories have risen slightly since summer. The slowing down in automobiles for model change-overs undoubtedly resulted in some improvement of stocks in that area. But, in general, manufacturers' stocks fall far below what is considered a safe margin.

In present circumstances the chances appear slim for buyers to improve their inventory position materially in the months immediately ahead. The absence of substantial stocks at year end could provide strong markets.

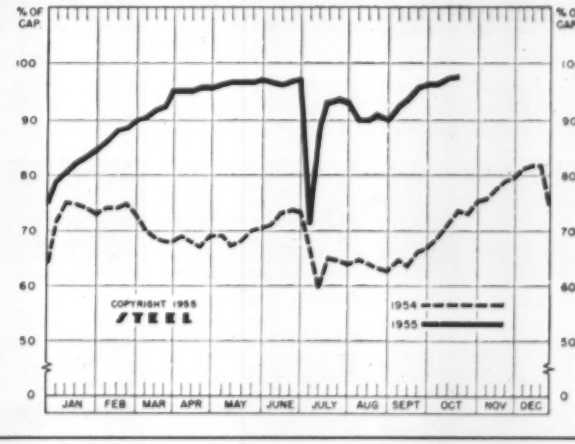
PROMISING OUTLOOK—Recent nervousness in the stock market, which resulted in a drop of over 45 points in the industrial stock average in about two weeks, has not been communicated to the manufacturing industry. Demand for steel is strong and promises to continue well into next year. Some slackening in activity may come as 1956 advances, but no one anticipates anything like a severe slump.

Building steel is expected to be active for months. A heavy volume of work is in prospect, including a number of large projects now in planning. One will require 180,000 tons of structurals; two will take 30,000 tons each. Of course, railroad steel needs will be heavier.

PRICES STRONG—Except for an increase in list prices on large and small bolts, market prices are unchanged. The revision in bolts is significant since it is the first change in years. Some premium-priced plates are moving from the East into Pittsburgh. STEEL's arithmetical price composite on finished steel is steady at $128.14. The steelmaking scrap composite is unchanged at $45.33.

PRODUCTION—The steel mills turned out record tonnage last week—estimated at about 2,350,000 net tons, compared with the previous all-time high of 2,345,000 tons in the week ended May 15 this year.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Oct. 16	Change	Same Week 1954	Same Week 1953
Pittsburgh	101.5	+ 0.5*	71	98
Chicago	98	+ 1.5	76	98.5
Mid-Atlantic	94.5	0	65	97
Youngstown	98	— 2	72	105
Wheeling	98	+ 0.5	87.5	94.5
Cleveland	99.5	— 1*	80	100.5
Buffalo	105	0	70.5	106.5
Birmingham	97.5	0	74	96.5
New England	90	+ 1	59	89
Cincinnati	91.5	+ 2	65.5	80.5
St. Louis	97.5	— 1	76.5	100.5
Detroit	94	— 4	80	100.5
Western	99	+ 3*	88	102
National Rate	97.5	+ 0.5	73.5	95

INGOT PRODUCTION‡

	Week Ended Oct. 16	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	146.3†	145.3	143.7	108.0
NET TONS (In thousands)	2,350†	2,334	2,309	1,735

*Change from preceding week's revised rate. †Est'mated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 67

Technical Outlook—p. 113

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Oct. 11 1955	Oct. 4 1955	Month Ago	Sept. Average
(1947-1949=100)	154.5	154.5	153.9	153.9

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Oct. 11

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800	Sheets, Electrical	$10.200
Rails, Light, 40 lb	6.217	Strip, C.R., Carbon	7.993
Tie Plates	5.625	Strip, C.R., Stainless, 430 (lb)	0.444
Axles, Railway	8.000	Strip, H.R., Carbon	5.350
Wheels, Freight Car, 33 in. (per wheel)	52.50	Pipe, Black, Buttweld (100 ft)	16.366
Plates, Carbon	4.950	Pipe, Galv., Buttweld (100 ft)	19.971
Structural Shapes	4.867	Pipe, Line (100 ft)	158.925
Bars, Tool Steel, Carbon (lb)	0.460	Casing, Oil Well, Carbon (100 ft)	165.120
Bars, Tool Steel Alloy, Oil Hardening Die (lb)	0.560	Casing, Oil Well, Alloy (100 ft)	244.670
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.185	Tubes, Boiler (100 ft)	39.470
Bars, Tool Steels, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680	Tubing, Mechanical, Carbon	20.980
Bars, H.R., Alloy	9.375	Tubing, Mechanical, Stainless, 304 (100 ft)	178.897
Bars, H.R., Stainless, 303 (lb)	0.450	Tin Plate, Hot-dipped, 1.25 lb	8.933
Bars, H.R., Carbon	5.350	Tin Plate, Electrolytic, 0.25 lb	7.633
Bars, Reinforcing	5.313	Black Plate, Canmaking Quality	6.733
Bars, C.F., Carbon	8.660	Wire, Drawn, Carbon	8.575
Bars, C.F., Alloy	12.175	Wire, Drawn, Stainless, 430 (lb)	0.578
Bars, C.F., Stainless, 302 (lb)	0.468	Bale Ties (bundle)	6.473
Sheets, H.R., Carbon	5.145	Nails, Wire, 8d Common	8.618
Sheets, C.R., Carbon	6.239	Wire, Barbed (80-rod spool)	7.847
Sheets, Galvanized	7.690	Woven Wire Fence (20-rod roll)	18.635
Sheets, C.R., Stainless, 302 (lb)	0.588		

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 12 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	208.90†	208.90†	207.56†	194.53	157.29
Index in cents per lb	5.661	5.661	5.623†	5.270	4.261

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$128.14	$128.14	$127.41	$117.95	$94.64
No. 2 Fdry, Pig Iron, GT	58.99	58.99	58.99	56.54	48.97
Basic Pig Iron, GT	58.49	58.49	58.49	56.04	47.72
Malleable Pig Iron, GT	59.77	59.77	59.77	57.27	49.20
Steelmaking Scrap, GT	45.33	45.33	44.33	32.00	41.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point

FINISHED STEEL	Oct. 12 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.65	4.65	4.65	4.30	3.45
Bars, H.R., Chicago	4.65	4.65	4.65	4.30	3.45
Bars, H.R., deld. Philadelphia	4.90	4.90	4.90	4.55	3.93
Bar, C.F., Pittsburgh	5.90	5.90	5.90	5.40	4.15
Shapes Std., Pittsburgh	4.60	4.60	4.60	4.25	3.40
Shapes, Std., Chicago	4.60	4.60	4.60	4.25	3.40
Shapes, deld., Philadelphia	4.88	4.88	4.88	4.53	3.48
Plates, Pittsburgh	4.50	4.50	4.50	4.225	3.50
Plates, Chicago	4.50	4.50	4.50	4.225	3.50
Plates, Coatesville, Pa.	4.50	4.50	4.50	4.225	3.90
Plates, Sparrows Point, Md.	4.50	4.50	4.50	4.225	3.50
Plates, Claymont, Del.	4.50	4.50	4.50	4.225	3.90
Sheets, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.35
Sheets, H.R., Chicago	4.325	4.325	4.325	4.05	3.35
Sheets, C.R., Pittsburgh	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Chicago	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Detroit	5.325-5.425	5.325-5.425	5.325-5.425	5.10	4.30
Sheets, Galv., Pittsburgh	5.85	5.85	5.85	5.45	4.40
Strip, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.50
Strip, H.R., Chicago	4.325	4.325	4.325	4.05	3.25
Strip, C.R., Pittsburgh	6.25†	6.25†	6.25†	5.75	4.15-4.50
Strip, C.R., Chicago	6.35†	6.35†	6.35†	6.00	4.30
Strip, C.R., Detroit	6.35	6.35	6.35	5.60-5.90	4.35-4.95
Wire, Basic, Pittsburgh	6.25	6.25	6.25	5.75	4.50-4.75
Nails, Wire, Pittsburgh	7.60	7.60	7.60	6.85	5.30-5.60
Tin plate (1.50 lb), box, Pitts.	$9.45	$9.45	$9.05	$9.05	$7.50

†Revised

SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$84.50	$84.50	$84.50	$78.00	$63.00
Wire rods, ⅜-⅞" Pitts.	5.025	5.025	5.025	4.675	3.85

PIG IRON, Gross Ton					
Bessemer, Pitts.	$59.50	$59.50	$59.50	$57.00	$48.50
Basic, Valley	58.50	58.50	58.50	56.00	47.50
Basic, deld. Phila.	59.16	59.16	59.16	59.66	50.39
No. 2 Fdry, Pitts.	59.00	59.00	59.00	56.50	49.50
No. 2 Fdry, Chicago	59.00	59.00	59.00	56.50	49.50
No. 2 Fdry, Valley	59.00	59.00	59.00	56.50	49.50
No. 2 Fdry, deld. Phila.	59.66	59.66	59.66	50.16	50.89
No. 2 Fdry, Birm.	55.00	55.00	55.00	52.88	45.88
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	62.70	60.58	52.58
Malleable, Valley	59.00	59.00	59.00	56.50	49.50
Malleable, Chicago	59.00	59.00	59.00	56.50	49.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	190.00†	175.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$44.50	$44.50	$43.50	$32.50	$44.00
No. 1 Heavy Melt, E. Pa.	46.50	46.50	46.50	30.50	39.00
No. 1 Heavy Melt, Chicago	45.00	45.00	42.00	33.00	40.00
No. 1 Heavy Melt, Valley	48.00	48.00	46.50	35.00	43.75
No. 1 Heavy Melt, Cleve.	44.50	44.50	44.00	32.00	43.25
No. 1 Heavy Melt, Buffalo	38.50	38.50	38.50	30.50	41.50
Rails, Rerolling, Chicago	65.50	65.50	64.50	52.50	61.00
No. 1 Cast, Chicago	48.50	48.50	46.50	39.50	50.50

COKE, Net Ton					
Beehive, Furn, Connlsvl.	$13.625	$13.625	$13.625	$13.75	$14.25
Beehive, Fdry, Connlsvl.	16.50	16.50	16.50	16.75	16.50
Oven, Fdry, Chicago	25.75	25.75	25.75	24.50	21.00

Daily Nonferrous Price Record

	Price Oct. 12	Last Change	Previous Price	Sept. Avg.	Aug. Avg.	Oct. 1954 Avg.
Copper	43.00-45.50	Oct. 7, 1955	43.00-50.00	45.380	37.759	30.000
Lead	15.30	Sept. 26, 1955	14.80	14.920	14.800	14.775
Zinc	13.00	Sept. 6, 1955	12.50	12.940	12.500	11.500
Tin	96.375	Oct. 12, 1955	96.25	96.565	96.519	93.110
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	24.40	Aug. 8, 1955	23.20-24.40	24.400	24.267	22.200
Magnesium	32.50	Aug. 16, 1955	28.50	32.500	30.574	27.000

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.** Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.** Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.** Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.** Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

OUTLOOK MARK

THE FINAL RETURN YOU GET ON ANY MACHINE YOU BOUGHT AT THE SHOW WILL BE DETERMINED BY A LITTLE TOOL LIKE THIS

You looked at many machines at the Machine Tool Builders Show. They were the most modern that man's ingenuity has been able to design and build . . . with higher powers, feeds, speeds . . . greater versatility. Perhaps you bought one . . . or more than one. Or perhaps you deferred your purchase to a later date. But, in either case, remember this: the *final* return on any machine depends on a little tool.

It will pay you to give your machines the tools they deserve . . . the BEST — whether the machine is one of the latest, high velocity automation types or an older one now in your plant.

For the latest developments in tool design and cutting grades . . . tooling for *consistent top* performance on any type of operation, or on any machine . . . look to Kennametal* for the best; because Kennametal has led the industry for years in improving tools and tooling techniques.

So, to be assured of the best . . . tooling to give the most consistent *repeat* performance, lowest cost per cutting edge and tools proved BEST — TEST AFTER TEST, specify Kennametal by *grade* and by *toolholder*.

Let a Kennametal Tool Engineer show you reports of performances with Kennametal tooling. He will be glad to help you select the right grade and tool for each operation. KENNAMETAL INC., Latrobe, Pa.

*Registered Trademark 7296

The NEW KENDEX

(illustrated above)

. . . combines simple but sturdy construction and the capacity to take deep cuts over a wide range of operations with inexpensive, turn-over type "throwaway" inserts. The clamp lifts for quick, accurate indexing, and is so designed that clamp forces are in the same direction as the cutting forces. Chipbreaker and shim of Kennametal, for long life, reduced machining costs. *Available immediately from stock in 17 styles and sizes.*

The NEW Kennametal Grade K-21

is outperforming all other carbides in the General Purpose Steel-cutting group because of its high edge strength combined with superior wear qualities and resistance to cratering. *Available in all insert styles from stock.*

Give your machines the tools they deserve . . . the BEST

INDUSTRY AND **KENNAMETAL** *. . . Partners in Progress*

Nonferrous Metals

ODM explains that it cannot release copper from stockpile as pressure groups insist. It denies that current tight market conditions are a matter of "common defense"

Nonferrous Metal Prices, Pages 162 & 163

PRICE INFLATION caused by civilian demand and "common defense" are birds of different feathers. This is the stand taken by the Office of Defense Mobilization in its refusal to release copper from stockpile.

Herbert Barchoff, president, Copper & Brass Warehouse Association, Washington, has suggested that 100,000 tons of Chilean copper, currently in stockpile, be released to alleviate the copper shortage.

History—The government can defer shipments of critical metals, but when such materials have been delivered, it takes a war or a Presidential decision to say that releasing the material is for "common defense." Congress placed these tight restrictions on the stockpile to avoid the dangers of a deflationary wave which could follow the injudicious release of stockpiled metals.

Advocates for releasing the red metal point to inflationary prices as something that should be thought of as a problem within the definition of "common defense." The Copper & Brass Warehouse Association based its plea on two major reasons: 1. The price of custom-smelted copper has risen (in the last six months) more than the total increase registered in the last 15 years. 2. Some 30,000 firms, representing 850,000 workers, are threatened with "cessation of activities or serious curtailment," says the association.

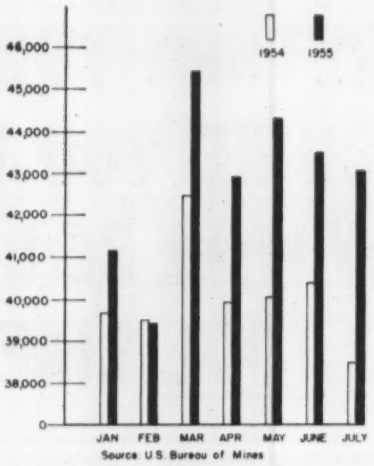
Signs of Help—While copper supplies will be tight through the first half of 1956, there are signs that the worst may be over. Copper prices on the London Metal Exchange took a nose dive last week and hovered near the 43-cent mark. If this price should stay near parity with U. S. prices, more Chilean copper could be expected within the next six months. Chile has been shipping two-thirds of its supply into the European area (because of a 7-cent differential in price) and one-third into the American market. Point of interest: When the price drops on the London Exchange, then Chile begins to think about a guaranteed price for all copper being shipped to the U. S.

More Good News—Custom smelters, taking a look at the London market decline, have dropped prices from 50 cents a pound (prevailing since Sept. 12) to a quotation of 45½-cents a pound.

While strikes in this country and Chile have taken a substantial production toll, the current soft spots indicate that skies may be brightening.

Question of the week: If Congress would allow ODM to allocate a quantity of copper on a historical basis, would the government then be accused of allocating, controlling and fixing the price of copper?

Mine Production of Zinc
(Net tons)



Source: U.S. Bureau of Mines

Miners Need Help

Andrew Fletcher, president, St. Joseph Lead Co., New York, told delegates to the American Mining Congress: "The best solution to offset increased production costs for lead, zinc and other similarly situated domestic metals is a moderate stockpiling program when production is in excess of consumption—coupled with a moderate increase in tariffs."

The St. Joe chief executive feels that an increase in the tariff would bring the following advantages: 1. U. S. prices would climb to a higher level than that of the rest of the world. 2. It would aid the American mines that need help, but not overstimulate the production of foreign mines.

Voicing approval of higher tariffs, W. Lunsford Long, president, Tungsten Institute, reported to the Mining Congress that the tungsten industry must devise ways and means of keeping alive. Mr. Long points out that during its four years of operation, the Federal Domestic Tungsten Purchase Program has produced 2.1-million ton units (tungsten purchased by the government). As of Aug. 31, some 69 per cent of the program's goal of 3 million ton units had been achieved. "If this average continues," states Mr. Long, "purchases by the government will terminate on about Sept. 1, 1956."

Export Quotas Expand

Under the licensing policy for the fourth quarter, the Bureau of Foreign Commerce reports, exports of refined foreign copper, except that produced from Canadian-origin copper scrap, will be open-ended. This means that exports will not be restricted except to protect national security. Third quarter exports were limited to 54,000 tons. Copper raw materials will continue to carry the third quarter limitations, with some minor changes.

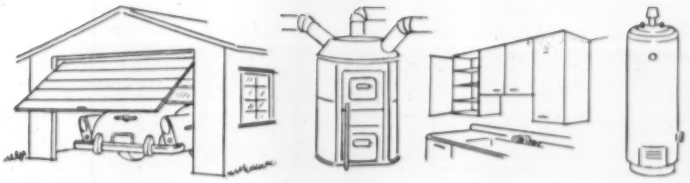
Fourth quarter export licensing for new and old aluminum scrap will be limited to a quota of 4000 tons. This includes remelt ingots. The third quarter quota was 5000 tons. Export licensing of primary and secondary ingots will continue to be open-ended.

Aluminum Product Sales Gain

Shipments of aluminum products continue to soar, reports the Aluminum Association, New York. Sheet and plate shipments jumped from 107 million lb in July to an August total of 130.1 million lb. During the first eight months of 1954, 660.6 million lb of sheet and plate were shipped while the eight-month totals for this year show shipments of 921.0 million lb. Foil gained 2.6 million lb over the July shipping total and all other classifications (extruded products, tube, bar and rod, etc.) showed substantial gains.

Slab Zinc Stocks Plunge Again

Stocks of slab zinc, pegged at 42,167 tons on Oct. 1, were the lowest since May, 1952, reports American Zinc Institute. This was a reduction of nearly 4000 tons from the previous month. Unfilled orders were at the lowest point for the year, registering only 52,278 tons.



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Newport Steel is ideally situated on the Mississippi-Ohio River system and the great Cincinnati rail-truck hub. New barge facilities, 7 major railroads and 143 motor carriers enable Newport to give economical, dependable delivery to the entire area of the Middle West and South.

PRODUCTS OF NEWPORT STEEL

Cold-Rolled Sheets
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets

Capable hands of long experience guide Newport steel products through the mill and out to leading manufacturers of equipment for the home. Careful buyers find in Newport a most effective combination of modern facilities, steelmaking experience, conscientious personnel, strict adherence to precise specifications, and strategic location in the heart of the nation's fastest growing industrial area. These qualities make Newport a most dependable source for your requirements of any of the steel products listed here.

Alloy Sheets and Plates
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Eave Trough and Conductor Pipe
Culverts

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CORPORATION

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YOUR CONFIDENCE IS JUSTIFIED WHERE THIS FLAG FLIES

A SUBSIDIARY OF MERRITT-CHAPMAN & SCOTT CORPORATION

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 24.40, pigs 22.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 26.2; No. 43, 5% Si, 26.00; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 28.20; No. 195, 4.5% Cu, 0.8% Si, 27.60; No. 214, 3.8% Mg, 27.80; No. 356, 7% Si, 0.3% Mg, 26.20.

Antimony: R.M.M. brand, 99.5%, 33.00, Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 43.00 deld. Conn. Valley; 43.00 deld. Midwest; custom smelters, 45.50 deld.; Lake, 43.00 deld.; Fire refined, 42.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$110 nom, per troy oz.

Lead: Common, 15.30, chemical, 15.40, corroding, 15.40, St. Louis, New York basis, add 0.20.

Lithium: 99% +, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 32.50; notched ingot, 33.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingot; for Los Angeles, add 2.00 for both pig and ingot. Sticks 1.3 in. diameter, 53.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, G, H and R, 36.00; alloy M, 38.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $274-$278 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $91-$96 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $9-$10 per lb.

Silver: Open market, 91.875 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 96.375; prompt, 96.125.

Titanium: Sponge, 99.3 + %, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon, reduced, 1000-lb lots, $4.50 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99 + % hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 13.00; brass special, 13.25; intermediate, 13.50, E. St. Louis, freight allowed over 0.50 per pound. High grade, 14.35; special high grade, 14.50, deld. Diecasting alloy ingot No. 3, 17.25; No. 2, 18.25; No. 5, 17.75, deld.

Zirconium: Ingots, commercial grade, $14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $10 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 31.00-33.00; No. 12 foundry alloy (No. 2 grade), 31.25-31.50; 5% silicon alloy, 0.60 Cu max, 32.75-33.00; 13 alloy, 0.60 Cu max, 32.75-33.00; 195 alloy, 32.75-33.25; 108 alloy, 31.50-32.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 31.00-32.25; grade 2, 30.00-31.25; grade 3, 29.25-30.50; grade 4, 28.50-30.00.

Brass Ingot: Red brass No. 115, 42.50; tin bronze No. 225, 56.50; No. 245, 48.75; high-leaded tin bronze No. 305, 45.75; No. 1 yellow No. 405, 34.75; manganese bronze No. 421, 38.25.

Magnesium Alloy Ingot: AZ63A, 34.00; AZ91B, 34.00; AZ91C, 34.00; AZ92A, 34.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.84; rod, bar, wire, $1.81.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 48.35; 30,000-lb lots 48.88; l.c.l., 48.98. Weatherproof, 100,000-lb lots, 46.03; 30,000-lb lots, 46.28; l.c.l., 46.78. Magnetic wire deld., 15,000 lb or more, 55.52; l.c.l., 56.27.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $21 per cwt; pipe, full coils, $21 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.50; plates 19.50-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	67.9	66.4	...	...
0.156-0.172	57.5	55.9	...	...
0.188	57.5	55.9	...	71.7
0.219-0.234	54.5	52.9	...	...
0.250-0.281	54.5	52.9	...	68.4
0.313	54.5	52.9	...	65.2
Cold-finished				
0.375-0.547	53.4	51.4	63.7	61.3
0.563-0.688	53.4	51.4	60.6	57.5
0.750-1.000	52.1	50.1	55.4	54.2
1.063	52.1	50.1	...	52.3
1.125-1.500	50.1	48.2	53.6	52.3
Rolled				
1.563	48.8	46.9	...	...
1.625-2.000	48.2	46.2	...	50.5
2.125-2.500	47.0	45.0	...	...
2.563-3.375	45.6	43.6	...	...

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finish (30,000 lb base; freight allowed)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	37.5	42.3	...	...
0.135-0.096	38.0	43.2	...	...
0.095-0.077	38.7	44.2	36.1	41.3
0.076-0.061	39.3	45.1	36.3	41.5
0.060-0.048	39.9	45.6	36.7	42.0
0.047-0.038	40.4	46.5	37.2	42.4
0.037-0.030	40.8	47.0	37.6	43.1
0.029-0.024	41.4	47.5	37.9	43.6
0.023-0.019	42.2	49.0	38.8	44.5
0.018-0.017	43.0	...	39.4	45.4
0.016-0.015	43.9	...	40.2	46.6
0.014	44.9	...	41.2	47.9
0.013-0.012	46.1	...	41.9	48.9
0.011	47.1	...	43.1	50.5
0.010-0.0095	48.4	...	44.3	52.2
0.009-0.0085	49.7	...	45.8	54.3
0.008-0.0075	51.3	...	47.0	56.1
0.007	52.8	...	48.5	58.4
0.006	54.4	...	49.9	63.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam. 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	36.5	40.8
5050-F	37.6	41.9
3004-F	38.6	43.8
5052-F	39.9	45.2
6061-T6	41.1	46.0
2024-T4*	43.6	49.9
7075-T6*	51.4	58.5

*24-48 in. widths or diam, 72-180 in. lengths.

ALUMINUM

Forging Stock: Round, Class 1, 39.10-50.10, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 43.00-56.20 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.85	2	$ 51.95
1	26.50	4	143.00
1¼	35.85	6	256.70
1½	42.90	8	386.30

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032 in., 99c; 0.064 in., 78.00c; 0.125 in., 63.50c, 30,000 lb and over, f.o.b. mill.

Plate: AZ31, 61.00c, 30,000 lb or more, 0.250 in. and over, widths 24-60 in., lengths 72-180 in.; tread plate, 64.00c, 30,000 lb or more, ¼-in. thick, widths 24-60 in., lengths 60-192 in.; tooling plate, 66.00c, 30,000 lbs or more, .250-3.000 in., widths 60-72 in., lengths 72-180 in.

Extrusions: AZ31 commercial grade, rectangles, ¼ x 2 in., 64.70c; 1 x 4 in., 69.50c. Rod, 1 in., 61.50c; 2 in., 59.00c. Tubing, 1 in. OD x 0.065 in., 82.50c; Angles, 1 x 1 x ¼-in., 68.40c; 2 x 2 x ¼-in., 62.50c. Channels, 5 in., 63.40c. I-beams, 5 in., 62.70c.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 19.50; old sheets, 17.50-18.00; borings and turnings, 11.00-11.50; crankcases, 17.50-18.00; industrial castings, 17.50-18.00.

Copper and Brass: No. 1 heavy copper and wire, 35.00-35.50; No. 2 heavy copper and wire, 34.00-34.50; light copper, 32.00-32.50 No. 1 composition red brass, 28.00-28.50; No. 1 composition turnings, 26.00-26.50; yellow

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	62.76b	60.36c	....	62.82	39.000	39.000	38.250
Yellow Brass	52.27	42.41d	52.81	55.18	28.875	28.625	26.750
Red Brass, 85%	58.09	58.03	58.63	60.90	34.250	34.000	33.500
Low Brass, 80%	56.55	56.49	57.09	59.36	32.750	32.250	31.750
Naval Brass	55.63	49.94	62.69	58.79	26.750	26.500	26.000
Com. Bronze, 90%	60.18	60.12	60.72	62.74	35.750	35.500	35.000
Nickel Silver, 10%	66.00	68.33g	68.33	....	32.500	32.250	16.250
Phos. Bronze, A, 5%	80.99	81.49	81.49	82.67	39.250	39.000	38.000
Silicon Bronze	66.54	65.73	66.58	68.68e	37.625	37.375	36.875
Manganese Bronze	59.37	53.38	63.82	....	27.000	26.750	25.750
Muntz Metal	53.74	49.55	....	....	27.000	26.750	26.250

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

brass turnings, 15.50-16.00; new brass clippings, 23.00-23.50; light brass, 15.50-16.00; heavy yellow brass, 17.50-18.00; new brass rod ends, 22.00-22.50; auto radiators, unsweated, 21.00-21.50; cocks and faucets, 23.00-23.50; brass pipe, 23.50-24.00

Lead: Heavy, 12.00-12.50; battery plates, 6.50-7.00; linotype and stereotype, 14.00-14.75; electrotype, 12.00-12.75; mixed babbitt, 14.50.

Magnesium: Clippings, 18.50-19.50; clean castings, 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 54.50-60.00; old sheets, 45.00-50.00; turnings, 44.00; rods, 54.50-60.00.

Nickel: Sheets and clips, 90.00-125.00; rolled anodes, 90.00-125.00; turnings, 75.00-100.00; rod ends, 90.00-125.00.

Zinc: Old zinc, 5.50-6.00; new die-cast scrap, 5.00-5.75; old die-cast scrap; 3.50-4.00.

REFINER'S BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 22.50-23.00; 3003 clippings, 22.75-23.00; 6151 clippings, 22.75-23.00; 5052 clippings, 22.75-23.00; 2014 clippings, 21.00-22.00; 2017 clippings, 20.00-22.00; 2024 clippings, 21.00-22.00; mixed clippings, 21.00-22.50; old sheet, 19.00-21.50; old cast, 19.50-21.50; clean old cable (free of steel), 22.50; borings and turnings 19.50-20.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 65.00; light scrap, 60.00; turnings and borings, 43.00-55.00.

Copper and Brass: No. 1 copper and wire, 39.00; No. 2 copper and wire, 37.50; light copper, 35.25; refinery brass (60% copper) per dry copper content, 35.50.

INGOTMAKERS'-BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 copper and wire, 39.00; No. 2 copper and wire, 37.50; light copper 35.25; No. 1 composition borings, 31.00; No. 1 composition solids, 31.50; heavy yellow brass solids, 24.00; yellow bras turnings, 23.50; radiators, 25.75.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 59.42, oval, 58.92, 5000-10,000 lb; electrodeposited, 56.78, 2000-5000 lb lots; cast 62.54, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb, $1.145; 200-499 lb, $1.13; 500-999 lb, $1.125; 1000 lb or more, $1.12.

Zinc: Balls, 21.00; flat tops, 21.00; flats, 22.75; ovals, 22.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb. in 100-lb drums.

Chromic Acid: Less than 10,000 lb, 28.50; over 10,000 lb, 27.50.

Copper Cyanide: 100-1000 lb, 80.00; 1000 lb and over, 78.00; effective Sept. 1, 1955.

Copper Sulphate: Crystal, 100 lb, 21.50; 200 lb, 18.50; 300 lb, 17.50; 400 lb, 17.00; 500-1900 lb, 15.50; 2000-10,000 lb, 15.25; 10,000 lb and up, 15.15. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.

Nickel Chloride: 100 lb, 46.50; 200 lb, 44.50; 300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 39.50; 10 000 lb and over, 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb, 38.25; 200 lb, 36.25; 3300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 lb, 31.25; 36,000 lb, 30.25. All prices eastern delivery, effective Jan. 1, 1955.

Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.

Sodium Cyanide: Egg, under 1000 lb, 19.80; 1000-19,900 lb, 18.80; 20,000 lb and over, 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 72.50; 100-600 lb, 58.10; 700-1900 lb, 55.70; 2000-9900 lb, 53.90; 10,000 lb or more, 52.80.

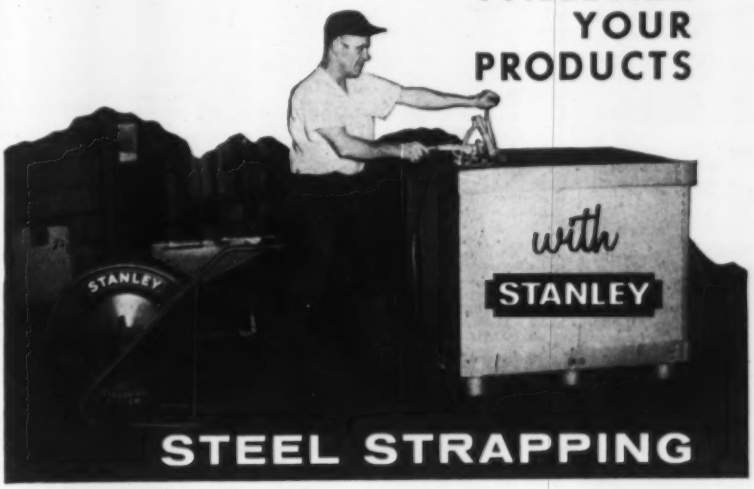
Stannous Chloride (Anhydrous): Less than 50 lb, $1.588; 50 lb, $1.248; 100-300 lb, $1.098; 400-900 lb, $1.074; 1000-1900 lb, $1.049; 2000-4900 lb, $1.013; 5000-19,900 lb, 95.20; 20,000 lb or more, 89.10.

Stannous Sulphate: Less than 50 lb, $1.287; 50 lb, 98.70; 100-1900 lb, 96.70; 2000 lb or more, 94.70.

Zinc Cyanide: Under 1000 lb, 54.30; 1000 lb and over, 52.30.

Replace MANY Packages with ONE

PALLETIZE YOUR PRODUCTS with STANLEY STEEL STRAPPING

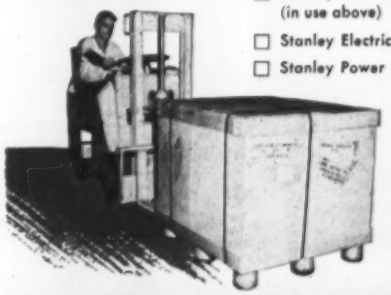


The Stant Manufacturing Company of Connorsville, Indiana is another progressive manufacturer added to a large and growing list of companies palletizing their products for safe, economical shipment with Stanley Steel Strapping.

FORMERLY: Stant shipped its taillight assemblies in numerous small corrugated cartons sealed with gummed tape, each carton requiring interior packing.

NOW: Stant uses the Stanley Steel Strapping System. ***75*** assemblies now are packed into ***one*** partitioned carton and strapped to an expendable pallet. This palletized unit is easily, safely handled in storage or en route to customer ***because*** it is ***reinforced*** and ***protected*** by the "sealed strength" of Stanley Steel Strapping. And the ***Plus*** cost-saving benefits are: less interior packing, fewer cartons, less handling and manpower required.

Stanley has a complete line of steel strapping hand and power tools for easier, faster, safer packing and shipping of boxes, cartons, crates, coils, bundles, skid-loads and pallet-loads.



☐ Stanley ACE Strapping Tool with Automatic Seal Feed (in use above)

☐ Stanley Electric Skid Magazine Tool

☐ Stanley Power Strapping Tool (Models SPS-1, SPS-2)

☐ Stanley Electric Car Banding Tool (Built-in Shear Optional)

Call in the Stanley Steel Strapping Specialist. He'll show *you* how to pack, move and ship more goods in less time at lower cost. Mail coupon for free catalog.

STANLEY INSURE IT – SECURE IT WITH STANLEY STEEL STRAPPING

STEEL STRAPPING DIVISION

THE STANLEY WORKS

STANLEY STEEL STRAPPING DIVISION, 1050-S LAKE ST., NEW BRITAIN, CONN.

Telephone: BAldwin 9-2021

☐ *Please send Catalog SS-9C.* ☐ *Please have Representative call.*

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POSITION_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS
STANLEY STEEL STRAPPING • STANLEY STEEL

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key on page 165. Key to footnotes, page 167.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$65.50

INGOTS, Alloy (NT)
Detroit R7 .....$69.00
Houston 85 .....74.00
Midland,Pa. C18 .....69.00
Munhall,Pa. U5 .....69.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)
Aliquippa,Pa. J5 ....$68.50
Bessemer,Pa. U5 ....68.50
Bridgeport,Conn. N19..73.50
Buffalo R2 .....68.50
Clairton,Pa. U5 .....68.50
Ensley,Ala. T2 .....68.50
Fairfield,Ala T2 .....68.50
Fontana,Calif. K1 ....76.00
Gary,Ind. U5 .....68.50
Johnstown,Pa. B2 ....68.50
Lackawanna,N.Y. B2 ..68.50
LoneStar,Tex. L6 ....74.50
Munhall, Pa. U5 .....68.50
Pittsburgh J5 .....68.50
S.Chicago,Ill. R2, U5..68.50
S.Duquesne,Pa. U5 ...68.50
Youngstown R2 .....68.50

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$84.50
Bessemer,Pa. U5 ....84.50
Bridgeport,Conn. N19..89.50
Buffalo R2 .....84.50
Canton,O. R2 .....86.50
Clairton,Pa. U5 .....84.50
Conshohocken,Pa. A3..89.50
Ensley,Ala. T2 .....84.50
Fairfield,Ala. T2 .....84.50
Fontana, Calif. K1 ....92.00
Gary,Ind. U5 .....84.50
Geneva,Utah C11 ....84.50
Houston 85 .....89.50
Johnstown,Pa. B2 ....84.50
Lackawanna,N.Y. B2..84.50
LosAngeles B3 .....94.00
Midland,Pa. C18 .....84.50
Munhall,Pa. U5 .....84.50
Pittsburgh J5 .....84.50
Seattle B3 .....98.00
S.Chicago R2,U5,W14..84.50
S.Duquesne,Pa. U5 ....84.50
S.SanFrancisco B3 ....94.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$96.00
Buffalo R2 .....96.00
Canton,O. R2, T7 ...96.00
Conshohocken,Pa. A3..103.00
Detroit R7 .....96.00
Fontana,Calif. K1 ....115.00
Gary,Ind. U5 .....96.00
Houston 85 .....101.00
Ind.Harbor,Ind. Y1 ..96.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....116.00
Massillon,O. R2 .....96.00
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ...96.00
Struthers,O. Y1 .....96.00
Warren,O. C17 .....96.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$103.50
Canton,O. R2 .....103.50
Cleveland R2 .....103.50
Gary,Ind. U5 .....103.50
S.Chicago R2, W14 ...103.50
S.Duquesne,Pa. U5 ...103.50

SKELP
Aliquippa,Pa. J5 ....4.325
LoneStar,Tex. L6 ....4.625
Munhall,Pa. U5 .....4.225
SparrowsPoint,Md. B2..4.225
Warren,O. R2 .....4.225
Youngstown R2, U5 ...4.225

WIRE RODS
AlabamaCity,Ala. R2 ..5.025
Aliquippa,Pa. J5 .....5.025
Alton,Ill. L1 .....5.20
Buffalo B11, W12 ....5.025
Cleveland A7 .....5.025
Donora,Pa. A7 .....5.025
Fairfield,Ala. T2 .....5.025
Houston 85 .....5.275
IndianaHarbor,Ind. Y1.5.025
Johnstown,Pa. B2 ....5.025
Joliet,Ill. A7 .....5.025
KansasCity,Mo. 85 ...5.275
Kokomo,Ind. C16 ....5.125
LosAngeles B3 .....5.825
Minnequa,Colo. C10 ...5.275
Monessen,Pa. P7 .....5.025
N.Tonawanda,N.Y. B11..5.025
Pittsburg,Calif. C11 ...5.675
Portsmouth P12 .....5.025
Roebling,N.J. R5 ....5.125
S.Chicago,Ill. R2 .....5.025
SparrowsPoint,Md. B2..5.125
Sterling,Ill.(1) N15 ....5.025
Sterling,Ill. N15 .....5.125
Struthers,O. Y1 .....5.025
Worcester,Mass. A7 ...5.325

STRUCTURALS

Carbon Steel Std. Shapes
Ala.City,Ala. R2 .....4.60
Aliquippa,Pa. J5 .....4.60
Bessemer,Ala. T2 .....4.60
Bethlehem,Pa. B2 .....4.65
Birmingham C15 .....4.60
Clairton,Pa. U5 .....4.60
Fairfield,Ala. T2 .....4.60
Fontana,Calif. K1 ....5.25
Gary,Ind. U5 .....4.60
Geneva,Utah C11 .....4.60
Houston 85 .....4.70
Ind.Harbor,Ind. I-2 ....4.60
Johnstown,Pa. B2 ....4.65
KansasCity,Mo. 85 ....4.70
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.30
Minnequa,Colo. C10 ....4.90
Munhall,Pa. U5 .....4.60
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 ....5.35
Phoenixville,Pa. P4 ....5.15
Seattle B3 .....5.35
S.Chicago U5, W14 ....4.60
S.SanFrancisco B3 ....5.25
Torrance,Calif. C11 ....5.30
Weirton,W.Va. W6 ....4.60

Wide Flange
Bethlehem,Pa. B2 .....4.65
Clairton,Pa. U5 .....4.60
Fontana,Calif. K1 .....5.40
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
Phoenixville,Pa. P4 .....5.15
S.Chicago,Ill. U5 .....4.60

Alloy Std. Shapes
Clairton,Pa. U5 .....5.65
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....5.65
Houston 85 .....5.75
Munhall,Pa. U5 .....5.65
S.Chicago,Ill. U5 .....5.65

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....6.75
Bessemer,Ala. T2 .....6.75
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.75
Fairfield,Ala. T2 .....6.75
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.75
Geneva,Utah C11 .....6.75
Houston 85 .....6.85
Ind.Harbor,Ind. I-2, Y1.6.75
Johnstown,Pa. B2 ....6.80
KansasCity,Mo. 85 ....6.85
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.45
Munhall,Pa. U5 .....6.75
Seattle B3 .....7.50
S.Chicago,Ill. U5, W14..6.75
S.SanFrancisco B3 ....7.40
Struthers,O. Y1 .....6.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....6.80
Lackawanna,N.Y. B2 ...6.80
Munhall,Pa. U5 .....6.75
S.Chicago,Ill. U5 .....6.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....4.65
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
S.Chicago,Ill. U5 .....4.60

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....5.45
Lackawanna,N.Y. B2 ...5.45
Munhall,Pa. U5 .....5.45
S.Chicago,Ill. U5 .....5.45

PLATES

PLATES, Carbon Steel
Ala.City,Ala. R2 .....4.50
Aliquippa,Pa. J5 .....4.50
Ashland,Ky.(15) A10 ...4.50
Bessemer,Ala. T2 .....4.50
Bridgeport,Conn. N19 ..4.75
Buffalo R2 .....4.50
Clairton,Pa. U5 .....4.50
Claymont,Del. C22 ....4.50
Cleveland J5, R2 .....4.60
Coatesville,Pa. L7 ....4.50
Conshohocken,Pa. A3 ..4.50
Detroit M1 .....4.60
Ecorse,Mich. G5 .....4.60
Fairfield,Ala. T2 .....4.50
Fontana,Calif.(30) K1 ..5.15
Gary,Ind. U5 .....4.50
Geneva,Utah C11 .....4.50
GraniteCity,Ill. G4 ....4.70
Harrisburg,Pa. C5 ....5.10
Houston 85 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.50
Johnstown,Pa. B2 ....4.50
Lackawanna,N.Y. B2 ...4.50
LoneStar,Tex. L6 .....4.85
Mansfield,O. E6 .....4.50
Minnequa,Colo. C10 ....5.35
Munhall,Pa. U5 .....4.50
Newport,Ky. N9 .....4.50
Pittsburgh J5 .....4.50
Riverdale,Ill. A1 .....4.50
Seattle B3 .....5.40
Sharon,Pa. S3 .....4.50
S.Chicago R2, U5, W14..4.50
SparrowsPoint,Md. B2 ..4.50
Steubenville,O. W10 ....4.50
Warren,O. R2 .....4.50
Weirton,W.Va. W6 ....4.50
Youngstown R2, U5, Y1.4.50

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 .....6.30
Geneva,Utah C11 .....5.65
Johnstown,Pa. B2 .....5.65
SparrowsPoint,Md. B2 ..5.65

PLATES, Wrought Iron
Economy,Pa. B14 .....10.40

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.725
Bessemer,Ala. T2 .....6.725
Clairton,Pa. U5 .....6.725
Cleveland J5, R2 ....6.725
Claymont,Del. C22 ....6.725
Coatesville,Pa. L7 ....6.725
Conshohocken,Pa. A3 ..6.725
Ecorse,Mich. G5 .....6.825
Fairfield,Ala. T2 .....6.725
Fontana,Calif.(30) K1 .7.375
Gary,Ind. U5 .....6.725
Geneva,Utah C11 .....6.725
Houston 85 .....6.825
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 ....6.725
LosAngeles B3 .....7.625
Munhall,Pa. U5 .....6.725
Pittsburgh J5 .....6.725
Seattle B3 .....7.625
Sharon,Pa. S3 .....6.725
S.Chicago,Ill. U5, W14..6.725
SparrowsPoint,Md. B2..6.725
Youngstown U5, Y1 ...6.725

PLATES, Alloy
Bridgeport,Conn. N19 ...6.85
Claymont,Del. C22 ....6.30
Coatesville,Pa. L7 ....6.30
Fontana,Calif. K1 .....6.95
Gary,Ind. U5 .....6.30
Houston 85 .....6.40
Ind.Harbor,Ind. Y1 .....6.30
Johnstown,Pa. B2 ....6.30
Munhall,Pa. U5 .....6.30
Newport,Ky. N9 .....6.30
Seattle B3 .....7.20
Sharon,Pa. S3 .....6.30
S.Chicago,Ill. U5, W14..6.30
SparrowsPoint,Md. B2 ..6.30
Youngstown Y1 .....6.30

FLOOR PLATES
Cleveland J5 .....5.575
Conshohocken,Pa. A3 ..5.575
Harrisburg,Pa. C5 ....5.575
Ind.Harbor,Ind. I-2 ....5.575
Munhall,Pa. U5 .....5.575
S.Chicago,Ill. U5 .....5.575

PLATES, Ingot Iron
Ashland c.l. (15) A10...4.75
Ashland l.c.l. (15) A10..5.25
Cleveland c.l. R2 .....5.10
Warren,O. c.l. R2 .....5.10

BARS

BARS, Hot-Rolled Carbon
Ala.City,Ala. R2 .....4.65
Aliquippa,Pa. J5 .....4.65
Alton,Ill. L1 .....4.85
Atlanta A11 .....4.85
Bessemer,Ala. T2 .....4.65
Birmingham C15 .....4.65
Bridgeport,Conn. N19 ..4.80
Buffalo R2 .....4.65
Canton,O. R2 .....4.75
Clairton,Pa. U5 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 .....4.65
FairlessHills,Pa. U5 ...4.80
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.65
Houston 85 .....4.90
Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 .....4.65
Joliet,Ill. P22 .....4.65
KansasCity,Mo. 85 ....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.75
Midland,Pa. C18 .....4.65
Milton,Pa. M18 .....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.65
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 .....4.65
Portland,Oreg. O4 .....5.40
Seattle B3, N14 .....5.40
S.Chicago R2, U5, W14..4.65
S.Duquesne,Pa. U5 ....4.65
S.SanFran.,Calif. B3 ...5.40
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 .....4.75
Struthers,O. Y1 .....4.65
Torrance,Calif. C11 ....5.35
Warren,O. R2 .....4.65
Weirton,W.Va. W6 ....4.65
Youngstown R2, U5 ...4.65

BARS, H.R. Leaded Alloy
Warren,O. C17 .....6.325

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....5.575
Bridgeport,Conn. N19 ..5.725
Buffalo R2 .....5.575
Canton,O. R2, T7 ....5.575
Clairton,Pa. U5 .....5.575
Detroit R7 .....5.575
Ecorse,Mich. G5 .....5.675
Fontana,Calif. K1 ....6.625
FairlessHills,Pa. U5 ...5.725
Gary,Ind. U5 .....5.575
Houston 85 .....5.825
Ind.Harbor,Ind. I-2,Y1.5.575
Johnstown,Pa. B2 ....5.575
KansasCity,Mo. 85 ....5.825
Lackawanna,N.Y. B2 ...5.575
LosAngeles B3 .....6.625
Massillon,O. R2 .....5.575
Midland,Pa. C18 .....5.575
S.Chicago R2, U5, W14..5.575
S.Duquesne,Pa. U5 ....5.575
Struthers,O. Y1 .....5.575
Warren,O. C17 .....5.575
Youngstown U5 .....5.575

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.80
Bessemer,Ala. T2 .....6.80
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.80
Cleveland R2 .....6.80
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....6.80
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.80
Houston 85 .....7.05
Ind.Harb.,Ind. I-2, Y1 ..6.80
Johnstown,Pa. B2 .....6.80
KansasCity,Mo. 85 ....7.05
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.50
Pittsburgh J5 .....6.80
Seattle B3 .....7.55
S.Chicago W14 .....6.80
S.Duquesne,Pa. U5 ....6.80
S.SanFrancisco B3 ....7.55
Struthers,O. Y1 .....6.80
Warren,O. R2 .....6.80
Youngstown U5 .....6.80

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa. B2 .....4.80

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.65
Atlanta A11 .....4.85
Fontana,Calif. K1 .....5.35
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SanFrancisco B7 .....5.05

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.65
Gary,Ind. U5 .....5.65
Houston 85 .....5.90
KansasCity,Mo. 85 ....5.90
Youngstown U5 .....5.65

BARS, C.F. Leaded Alloy
Ambridge,Pa. W18 ...8.325
Camden,N.J. P13 .....8.50
Chicago W18 .....8.325
Cleveland C20 .....8.325
Monaca, Pa. S17 ....8.325
Newark,N.J. W18 ....8.50
SpringCity,Pa. K3 ....8.50
Warren,O. C17 .....8.325

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.90
BeaverFalls,Pa. M12, R2 5.90
Buffalo B5 .....5.95
Camden,N.J. P13 .....6.35
Carnegie,Pa. C12 .....5.90
Chicago W18 .....5.90
Cleveland A7, C20 ....5.90
Detroit R7 .....5.90
Detroit B5, P17 .....6.10
Donora,Pa. A7 .....5.90
Elyria,O. W18 .....5.90
FranklinPark,Ill. N5 ....5.90
Gary,Ind. R2 .....5.90
GreenBay,Wis. F7 .....5.90
Hammond,Ind. L2, M13.5.90
Hartford,Conn. R2 .....6.40
Harvey,Ill. B5 .....5.90
LosAngeles R2, S30 ....7.35
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8 ....5.90
Midland,Pa. C18 .....5.90
Monaca,Pa. S17 .....5.90
Newark,N.J. W18 .....6.35
NewCastle,Pa.(17) B4 ..5.90
Pittsburgh J5 .....5.90
Plymouth,Mich. P5 ....6.15
Putnam,Conn. W18 ....6.45
Readville,Mass. C14 ....6.45
S.Chicago,Ill. W14 ....5.90
SpringCity,Pa. K3 ....6.35
Struthers,O. Y1 .....5.90
Waukegan,Ill. A7 .....5.90
Worcester,Mass. W19 ...6.35
Youngstown F3, Y1 ....5.90

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. C19 ...5.15

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....7.425
BeaverFalls,Pa.M12,R2 7.425
Bethlehem,Pa. B2 .....7.425
Buffalo B5 .....7.425
Camden,N.J. P13 .....7.60
Canton,O. T7 .....7.425
Carnegie,Pa. C12 .....7.425
Chicago W18 .....7.425
Cleveland A7, C20 ....7.425
Detroit R7 .....7.425
Detroit B5, P17 .....7.625
Donora,Pa. A7 .....7.425
Elyria,O. W8 .....7.425
Gary,Ind. R2 .....7.425
GreenBay,Wis. F7 .....7.425
Hammond,Ind. L2, M13.7.425
Hartford,Conn. R2 ....7.725
Harvey,Ill. B5 .....7.425
Lackawanna,N.Y. B2 ..7.425
LosAngeles S30 .....9.10
Mansfield,Mass. B5 ...7.725
Massillon,O. R2, R8 ...7.425
Midland,Pa. C18 .....7.425
Monaca,Pa. S17 .....7.425
Newark,N.J. W18 .....7.60
Plymouth,Mich. P5 ....7.625
S.Chicago W14 .....7.425
SpringCity,Pa. K3 .....7.60
Struthers,O. Y1 .....7.425
Warren,O. C17 .....7.425
Waukegan,Ill A7 .....7.425
Worcester,Mass. A7 ...7.725
Youngstown F3, Y1 ...7.425

BARS, Reinforcing (To Fabricators)
Ala.City,Ala R2 .....4.65
Atlanta A11 .....4.85
Birmingham C15 .....4.65
Buffalo R2 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ...5.40
Fairfield,Ala. T2 .....4.65
FairlessHills,Pa. U5 ....4.80
Fontana,Calif. K1 .....5.35
Ft.Worth,Tex.(42) T4 ...5.10
Gary,Ind. U5 .....4.65
Houston 85 .....4.90

Ind.Harbor,Ind. I-2, Y1 4.65
Johnstown,Pa. B2 ..... 4.65
Joliet,Ill. P22 ..... 4.65
KansasCity,Mo. S5 .... 4.90
Lackawanna,N.Y. B2 .. 4.65
LosAngeles B3 ..... 5.35
Milton,Pa. M18 ..... 4.65
Minnequa,Colo. C10 .... 5.10
Niles,Calif. P1 ..... 5.00
Pittsburg,Calif. C11 .... 5.35
Pittsburgh J5 ..... 4.65
Portland,Oreg. O4 ..... 5.40
SandSprings,Okla. S5 .. 5.15
Seattle B3, N14 ..... 5.40
S.Chicago R2 ..... 4.65
S.Duquesne,Pa. U5 .... 4.65
S.SanFrancisco B3 ..... 5.40
SparrowsPoint,Md. B2 .. 4.65
Sterling,Ill.(1) N15 .... 4.65
Sterling,Ill. N15 ..... 4.75
Struthers,O. Y1 ..... 4.65
Torrance,Calif. C11 .... 5.35
Youngstown R2, U5, Y1 4.65

BARS, Reinforcing (Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2 6.15
KansasCity,Kans. S5 ... 6.45
Lackawanna,N.Y. B2 .. 6.17
Marion,O. P11 ..... 5.90
Pittsburgh U8 ..... 6.17
Seattle B3, N14 ..... 6.60
SparrowsPt. ½-1" B2 .. 6.15
Williamsport,Pa. S19 .. 6.00

RAIL STEEL BARS

Avis,Pa.(3) J8 ..... 4.25
ChicagoHts.(3) C2, I-2 .. 4.55
ChicagoHts.(4) C2, I-2 .. 4.65
Ft.Worth,Tex.(26) T4 .. 4.95
Franklin,Pa.(3) F5 .... 4.55
Franklin,Pa.(4) F5 .... 4.65
Marion,O.(3) P11 ..... 4.50
Moline,Ill.(3) R2 ..... 4.65
Tonawanda(3) B12 .... 4.50
Tonawanda(4) B12 .... 4.65
Williamsport,Pa.(3) S19 4.65

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 11.50
Economy,Pa.(D.R.)B14 14.30
Economy(Staybolt)B14 14.65
McK.Rks.(S.R.) L5 ... 11.50
McK.Rks.(D.R.) L5 ... 16.00
McK.Rks.(Staybolt) L5 .17.00

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 ..... 4.325
Allenport,Pa. P7 ..... 4.325
Ashland,Ky.(8) A10 ... 4.325
Cleveland J5, R2 ..... 4.325
Conshohocken,Pa. A3 .. 4.375
Detroit(8) M1 ..... 4.425
Dravosburg,Pa. U5 .... 4.325
Ecorse,Mich. G5 ..... 4.425
Fairfield,Ala. T2 ..... 4.325
FairlessHills,Pa. U5 ... 4.375
Fontana,Calif. K1 .... 5.075
Gary,Ind. U5 ..... 4.325
Geneva,Utah C11 ..... 4.425
GraniteCity,Ill. G4 .... 4.525
Ind.Harbor,Ind. I-2, Y1 4.325
Kokomo,Ind. C16 ..... 4.425
Lackawanna,N.Y. B2 .. 4.325
Mansfield,O. E6, (37) .. 4.325
Munhall,Pa. U5 ..... 4.325
Newport,Ky.(8) N9 ... 4.325
Niles,O. N12 ..... 4.325
Pittsburg,Calif. C11 ... 5.025
Pittsburgh J5 ..... 4.325
Portsmouth,O. P12 .... 4.325
Riverdale,Ill. A1 ..... 4.325
Sharon,Pa. S3 ..... 4.325
S.Chicago,Ill. W14 .... 4.325
SparrowsPoint,Md. B2 .. 4.325
Steubenville,O. W10 ... 4.325
Warren,O. R2 ..... 4.325
Weirton,W.Va. W6 .... 4.325
Youngstown U5, Y1 .. 4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 ..... 5.625
Kokomo,Ind. C16 .... 5.475
Niles,O. N12 ..... 5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .... 7.20
Youngstown Y1 ..... 7.20

SHEETS, H.R. (14 Ga. & Heavier) High-Strength Low-Alloy

Cleveland J5, R2 ..... 6.375
Conshohocken,Pa. A3 .. 6.425
Dravosburg,Pa. U5 .... 6.375
Ecorse,Mich. G5 ..... 6.475
Fairfield,Ala. T2 ..... 6.375
FairlessHills,Pa. U5 ... 6.425
Fontana,Calif. K1 .... 7.125
Gary,Ind. U5 ..... 6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 .. 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
Sharon,Pa. S3 ..... 6.375
S.Chicago,Ill. U5 .... 6.375
SparrowsPoint(36) B2 .. 6.375
Warren,O. R2 ..... 6.375
Weirton,W.Va. W6 .... 6.375
Youngstown U5, Y1 .. 6.375

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ... 4.575
Cleveland R2 ..... 4.925
Ind.Harbor,Ind. I-2 ... 4.575
Warren,O. R2 ..... 4.925

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 ..... 5.325
Cleveland J5, R2 ..... 5.325
Conshohocken,Pa. A3 .. 5.375
Dravosburg,Pa. U5 .... 5.325
Detroit M1 ..... 5.325
Ecorse,Mich. G5 ..... 5.425
Fairfield,Ala. T2 ..... 5.325
FairlessHills,Pa. U5 ... 5.375
Follansbee,W.Va. F4 .. 5.325
Fontana,Calif. K1 .... 6.425
Gary,Ind. U5 ..... 5.325
GraniteCity,Ill. G4 .... 5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 .. 5.325
Mansfield,O. E6 ..... 5.325
Middletown,O. A10 .... 5.325
Newport,Ky. N9 ..... 5.325
Pittsburg,Calif. C11 .. 6.275
Pittsburgh J5 ..... 5.325
Portsmouth,O. P12 .... 5.325
SparrowsPoint,Md. B2 .. 5.325
Steubenville,O. W10 ... 5.325
Warren,O. R2 ..... 5.325
Weirton,W.Va. W6 .... 5.325
Youngstown Y1 ..... 5.325

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 7.875
Dravosburg,Pa. U5 .... 7.875
Ecorse,Mich. G5 ..... 7.975
FairlessHills,Pa. U5 ... 7.925
Fontana,Calif. K1 .... 8.975
Gary,Ind. U5 ..... 7.875
IndianaHarbor,Ind. Y1 7.875
Lackawanna(37) B2 .. 7.875
Pittsburgh J5 ..... 7.875
SparrowsPoint(38) B2 .. 7.875
Warren,O. R2 ..... 7.875
Weirton,W.Va. W6 .... 7.875
Youngstown Y1 ..... 7.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..... 5.925
Middletown,O. A10 .... 5.825
Warren,O. R2 ..... 5.925

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.90	...
Canton,O. R2	6.10	6.55
Dravosburg U5	6.10	...
Fairfield T2	6.10	...
Gary,Ind. U5	6.10	6.35
Ind.Harbor I-2	6.10	6.35
Kokomo,Ind. C16	6.20	...
MartinsFry. W10	6.10	...
Newport,Ky. N9	6.10	6.35
Pitts.,Calif. C11	6.85	...
SparrowsPt. B2	6.10	...

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 ..... 7.15
Gary,Ind. U5 ..... 6.35
MartinsFry,O. W10 .... 6.35

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 ..... 5.85‡
Ashland,Ky. A10 ..... 5.85†
Canton,O. R2 ..... 5.85‡
Delphos,O. N16 ..... 6.60‡
Dover,O. R1 ..... 5.85‡
Dravosburg,Pa. U5 ... 5.85†
Fairfield,Ala. T2 ..... 5.85†
Gary,Ind. U5 ..... 5.85*
GraniteCity,Ill. G4 .... 6.05
Ind.Harbor,Ind. I-2 ... 5.85†
Kokomo,Ind. C16 ..... 5.95‡
MartinsFerry,O. W10 .. 5.85*
Middletown,O. A10 .... 5.85†
Newport,Ky. N9 ..... 5.85‡
Niles,O. N12 ..... 6.85‡
Pittsburg,Calif. C1 .... 6.60*
SparrowsPt.,Md., B2 .. 5.85†
Steubenville,O. W10 ... 5.85‡
Warren,O. R2 ..... 5.85†
Weirton,W.Va. W6 .... 5.85*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .... 6.575

SHEETS, Galvanized High-Strength Low-Alloy

Dravosburg,Pa. U5 .... 8.60
SparrowsPoint(39) B2 .. 8.60

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 6.25
Dravosburg,Pa. U5 .... 6.25
Kokomo,Ind. C16 ..... 6.60
Newport,Ky. N9 ..... 6.25
Niles,O. N12 ..... 7.25

SHEETS, Galvanized Ingot Iron (Hot-dipped Continuous)

Ashland,Ky. A10 ..... 6.10
Canton,O. R2 ..... 6.60
Middletown,O. A10 .... 6.10

SHEETS, Electrogalvanized

Cleveland(28) R2 ..... 6.70
Niles,O.(28) R2 ..... 6.70
Weirton,W.Va. W6 .... 6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 8.50
Butler,Pa. A10 (type 2) 8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 ..... 5.90
Cleveland R2 ..... 5.90
Dravosburg,Pa. U5 .... 5.90
Gary,Ind. U5 ..... 5.90
GraniteCity,Ill. G4 .... 6.10
Ind.Harbor,Ind. I-2 .... 5.90
Middletown,O. A10 .... 5.90
Niles,O. N12 ..... 5.90
Youngstown Y1 ..... 5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ... 7.75
Ind.Harbor,Ind. I-2 .... 7.75
Yorkville,O. W10 ..... 7.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 ..... 6.25
Mansfield,O. E6 ..... 6.25
Middletown,O. A10 .... 6.25
Niles,O. N12 ..... 6.25
Weirton,W.Va. W6 ..... 6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .... 6.65

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Division, H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W5 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.325
Allenport,Pa. P7 .....4.325
Alton,Ill. L1 .....4.50
Ashland,Ky.(8) A10 ..4.325
Atlanta A11 .....4.525
Bessemer,Ala. T2 ....4.325
Birmingham C15 .....4.325
Bridgeport,Conn. N19..4.625
Buffalo(27) R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit M1 .....4.425
Ecorse,Mich. G5 .....4.425
Fairfield,Ala. T2 ....4.325
Fontana,Calif. K1 ....5.075
Gary,Ind. U5 .....4.325
Ind.Harbor, Ind.I-2, Y1.4.325
Johnstown,Pa.(25) B2..4.325
Lackaw'na,N.Y.(24) B2 4.325
LosAngeles(25) B3 ....5.075
Milton,Pa. M18 .....4.325
Minnequa,Colo. C10 ..5.425
NewBritain(10) S15 ..4.325
N.Tonawanda,N.Y. B11 4.325
Pittsburg,Calif. C11 ..5.075
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
SanFrancisco S7 .....5.05
Seattle(25) S3 .....5.325
Seattle N14 .....5.40
Sharon Pa. S3 .....4.325
S.Chicago,Ill. W14 ...4.325
S.SanFrancisco(25) B3.5.075
SparrowsPoint,Md. B2..4.325
Sterling(1) N15 .....4.325
Sterling,Ill. N15 .....4.425
Torrance,Calif. C11 ..5.075
Warren,O. R2 .....4.325
Weirton W.Va. W6 ....4.325
Youngstown U5 .....4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ..7.50
Carnegie,Pa. S18 .....7.20
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 .....7.20
Ind.Harbor Ind. Y1 ....7.20
LosAngeles B3 .....8.40
Newport,Ky. N9 .....7.20
Sharon,Pa. S3 .....7.20
S.Chicago W14 .....7.20
Youngstown U5, Y1 ....7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ....6.425
Conshohocken,Pa. A3 ..6.425
Ecorse,Mich. G5 .....6.525
Fairfield,Ala. T2 ....6.425
Fontana,Calif. K1 ....7.525
Gary Ind. U5 .....6.425
Houston S5 .....6.675
Ind.Harbor,Ind. I-2, Y1 6.425
KansasCity,Mo. S5 ....6.675
Lackawanna,N.Y. B2 ..6.425
LosAngeles(25) B3 ....7.175
Seattle(25) B3 .....7.425
Sharon,Pa. S3 .....6.425
S.SanFrancisco(25) B3.7.175
SparrowsPoint,Md. B2..6.425
Warren,O. R2 .....6.425
Weirton,W.Va. W6 ....6.425
Youngstown U5, Y1 ..6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ..4.575
Warren,O. R2 .....4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....6.25
Baltimore T6 .....6.25
Boston T6 .....6.80
Buffalo S40 .....6.25
Cleveland J5 .....6.25
Cleveland A7 .....6.25
Conshohocken,Pa. A3 ...6.30
Dearborn,Mich. D3 ...6.35
Detroit D2, M1, P20 ...6.35
Dover,O. G6 .....6.25
Ecorse,Mich. G5 .....6.35
Follansbee,W.Va. F4 ..6.25
Fontana,Calif. K1 ....8.00
FranklinPark,Ill. T6 ..6.35
Ind.Harbor,Ind. I-2 ...6.35
Ind.Harbor,Ind. Y1 ....6.25
Indianapolis C8 .....6.40
Lackawanna,N.Y. B2 ..6.25
LosAngeles C1 .....8.50
NewBedford,Mass. R10..6.70
NewBritain(10) S15 ...6.25
NewCastle,Pa. B4, E5..6.25
NewHaven,Conn. A7....7.00
NewHaven,Conn. D2....6.70
NewKensington,Pa. A6..6.25
Pawtucket,R.I. R3 ....6.90
Pawtucket,R.I. N8 ....6.80
Pittsburgh J5 .....6.25
Portsmouth,O. P12 ....6.25
Riverdale,Ill. A1 .....6.35
Rome,N.Y.(32) R6 ....6.25
Sharon,Pa. S3 .....6.25
SparrowsPt.,Md. B2 ....6.25
Trenton,N.J.(31) R5 ...7.80
Wallingford,Conn. W2 ..6.70
Warren,O. R2, T5 .....6.25
Weirton,W.Va. W6 ....6.25
Worcester,Mass. A7 ....7.10
Youngstown Y1 .....6.25
Youngstown C8 .....6.25

STRIP, Cold-Rolled Alloy

Boston T6 .....13.80
Carnegie,Pa. S18 .....13.45
Cleveland A7 .....13.45
Dover,O. G6 .....13.45
FranklinPark,Ill. T6 ...13.45
Harrison,N.J. C18 ....13.45
Indianapolis C8 .....13.60
Pawtucket,R.I. N8 ...13.80
Sharon,Pa. S3 .....13.45
Worcester,Mass. A7 ...13.75
Youngstown C8 .....13.45

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7 .....9.10
Dearborn,Mich. D3 ....9.20
Dover,O. G6 .....9.30
Ecorse,Mich. G5 .....9.20

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	7.30	9.25	10.80	12.95	15.65
Boston T6	7.55	9.25	10.80	12.95	15.65
Bristol,Conn. W1	...	...	10.80	12.95	....
Carnegie,Pa. S18	...	8.95	10.50	12.65	....
Cleveland A7	7.00	8.95	10.50	12.65	15.35
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	7.10	9.05	10.60	....	....
Detroit D2	7.10	9.05	10.60	12.75	....
Dover,O. G6	7.00	8.95	10.50	12.65	15.35
Follansbee,W.Va. F4	7.00	8.95	10.50**	....	....
FranklinPark,Ill. T6	7.10	8.95	10.50	12.65	15.35
Harrison,N.J. C18	...	...	10.80	12.95	15.65
Indianapolis C8	7.15	9.10	10.50	12.65	15.35
NewBritain,Conn.(10) S15	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4, E5	7.00	8.95	10.50	12.65	....
NewHaven,Conn. D2	7.45	9.25	10.80	12.95	....
NewKensington,Pa. A6	7.00	8.95	10.50	....	....
New York W3	...	9.25	10.80	12.95	15.65
Pawtucket,R.I. N8	7.55	9.25	10.80	12.95	15.35
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	7.00	8.95	10.50	12.65	15.35
Trenton,N.J. R5	...	9.25	10.80	12.95	15.65
Wallingford,Conn. W2	7.45	9.25	10.80	12.95	15.65
Warren,O. T5	7.00	8.95	10.50	12.65	15.35
Weirton,W.Va. W6	7.00	8.95	10.50	12.65	15.35
Worcester,Mass. T6	7.55	9.25	10.80	12.95	15.65
Worcester,Mass. A7	7.85	9.25	10.80	12.95	15.65
Youngstown C8	7.00	8.95	10.50	12.65	15.35

**0.065 C, max.

Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	14.40	17.60	....
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6	...	...	14.90	18.10	21.50
Harrison,N.J. C18	...	...	14.40	17.60	21.00
NewYork W3	...	...	14.40	17.60	21.00
Trenton,N.J. R5	...	...	14.40	17.60	21.00
Worcester,Mass. A7, T6	...	...	14.40	17.60	21.00
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	14.75	17.95	21.35

Ind.Harbor,Ind. Y1 ....9.30
Lackawanna,N.Y. B2 ..9.10
Sharon,Pa. S3 .....9.10
SparrowsPoint,Md. B2 ..9.10
Warren,O. R2 .....9.10
Weirton,W.Va. W6 ....9.10
Youngstown Y1 .....9.30

STRIP, Electrogalvanized

Cleveland A7 .....6.25*
Dover,O. G6 .....6.25*
Riverdale,Ill. A1 .....6.55*
Youngstown C8 .....6.25*
Warren,O. T5 .....6.25*
Warren,O. B9 .....6.45*
Weirton,W.Va. W6 ....5.75*
Worcester,Mass. A7 ...7.10*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....6.55

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.05
Riverdale,Ill. A1 .....4.90
Sharon,Pa. S3 .....4.75
Youngstown U5 .....4.75

SILICON STEEL

H.R. SHEETS(22 Ga.,cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	...	...	9.95	10.95	11.85
Brackenridge,Pa. A4	...	...	9.95	10.95	11.85
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	8.40	9.35	9.95	10.95	....
Vandergrift,Pa. U5	...	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10	...	9.35	9.95	10.95	11.85

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	...	10.70	11.70	12.60
GraniteCity,Ill. G4	8.80*	9.80*	10.40*	11.40*	....
IndianaHarbor,Ind. I-2	8.60†	9.60*	10.20*	11.20*	....
Vandergrift,Pa. U5	...	10.10†	10.70†	11.70†	12.60†
Vandergrift,Pa. U5	8.60*	9.60*	10.20*	11.20*	12.10*
Warren,O. R2	8.60†	10.10	10.70	11.70	12.60
Zanesville,O. A10	...	10.10	10.70	11.70	12.60

	Transformer Grade			
H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	12.80	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	12.80	13.35	13.85	14.85
Zanesville,O. A10	12.80§	13.35§	13.85§	14.85§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.85	17.45	17.95	13.55‡
Butler,Pa. A10	....	....	17.45	17.95	....
Vandergrift,Pa. U5	14.85	15.85	17.45	17.95	13.55
Warren,O. R2	....	....	....	....	13.55‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.90	$8.15	$8.55
Dravosburg,Pa. U5	7.90	8.15	8.55
Fairfield,Ala. T2	8.00	8.25	8.65
FairlessHills,Pa. U5	8.00	8.25	8.65
Gary,Ind. U5	7.90	8.15	8.55
GraniteCity,Ill. G4	8.00	8.25	8.65
IndianaHarbor,Ind. I-2, Y1	7.90	8.15	8.55
Niles,O. R2	7.90	8.15	8.55
Pittsburg,Calif. C11	8.65	8.90	9.30
SparrowsPoint,Md. B2	8.00	8.25	8.65
Weirton,W.Va. W6	7.90	8.15	8.55
Yorkville,O. W10	7.90	8.15	8.55

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	6.575	....	....
Niles,O. R2	7.075	7.275	7.475

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$9.20	$9.45
Dravosburg,Pa. U5	9.20	9.45
Fairfield,Ala. T2	9.30	9.55
Fairless,Pa. U5	9.30	9.55
Gary,Ind. U5	9.20	9.45
Ind.Har. I-2, Y1	9.20	9.45
Pitts.,Calif. C11	9.95	10.20
Sp.Pt.,Md. B2	9.30	9.55
Warren,O. R2	9.20	9.45
Weirton,W.Va. W6	9.20	9.45
Yorkville,O. W10	9.20	9.45

BLACK PLATE, (Base Box)

Aliquippa,Pa. J5	$7.00
Dravosburg,Pa. U5	7.00
Fairfield,Ala. T2	7.10
FairlessHills,Pa. U5	7.10
Gary,Ind. U5	7.00
GraniteCity Ill. G4	7.10
Ind.Harbor,Ind. I-2, Y1	7.00
Niles,O. R2	7.00
Pittsburg,Calif. C11	7.75
SparrowsPoint,Md. B2	7.10
Warren,O. R2	7.00
Weirton,W.Va. W6	7.00
Yorkville,O. W10	7.00

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5	6.65
Gary,Ind. U5	6.65
GraniteCity,Ill. G4	6.75
Ind.Harbor,Ind. Y1	6.65
Yorkville,O. W10	6.65

MANUFACTURING TERNES (Special Coated; Base Box)

Dravosburg,Pa. U5	$8.70
Gary,Ind. U5	8.70

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$9.15

ROOFING SHORT TERNES (8 lb Coated; Base Box)

Gary,Ind. U5	$10.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..6.25
Aliquippa,Pa. J5 .....6.25
Alton Ill. L1 .....6.425
Atlanta A11 .....6.45
Bartonville,Ill. K4 ....6.35
Buffalo W12 .....6.25
Chicago W13 .....6.25
Cleveland A7 .....6.25
Crawfordsville,Ind. M8..6.35
Donora,Pa. A7 .....6.25
Duluth Minn. A7 .....6.25
Fairfield,Ala. T2 .....6.25
Fostoria,O.(24) S1 ....6.45
Houston S5 .....6.50
Jacksonville,Fla. M8 ..6.77
Johnstown,Pa. B2 .....6.25
Joliet,Ill. A7 .....6.25
KansasCity,Mo. S5 ....6.50
Kokomo,Ind. C16 .....6.35
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.50
Monessen,Pa. P7 .....6.25
Newark 6-8 ga. I-1 ....6.90
N.Tonawanda B11 ....6.25
Palmer,Mass. W12 ....6.55
Pittsburg Calif. C11 ...7.20
Portsmouth,O. P12 ....6.25
Rankin,Pa. A7 .....6.25
S.Chicago,Ill. R2 .....6.25
S.SanFrancisco C10 ....7.20
SparrowsPoint,Md. B2 ..6.35
Sterling,Ill.(1) N15 ....6.25
Sterling,Ill. N15 .....6.35
Struthers,O. Y1 .....6.25
Waukegan Ill. A7 .....6.25
Worcester,Mass. A7 ....6.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.90
Alton,Ill. L1 .....8.075
Bartonville Ill. K4 ....8.00
Buffalo W12 .....7.90
Cleveland A7 .....7.90
Donora,Pa. A7 .....7.90
Duluth,Minn. A7 .....7.90
Fostoria,O. S1 .....7.95
Johnstown,Pa. B2 .....7.90
LosAngeles B3 .....8.85
Milbury,Mass.(12) N6 ..8.20
Minnequa,Colo. C10 ....8.15
Monessen,Pa. P16 .....7.90
Muncie,Ind. I-7 .....8.10
Palmer,Mass. W12 .....8.20
Pittsburg,Calif. C11 ...8.85
Portsmouth,O. P12 ....7.90
Roebling,N.J. R5 .....8.20
S.Chicago,Ill. R2 .....7.90
S.SanFrancisco C10 ....8.85
SparrowsPt.,Md. B2 ...8.00
Struthers,O. Y1 .....7.90
Trenton,N.J. A7 .....8.20
Waukegan,Ill. A7 .....7.90
Worcester A7,J4,T6,W12.8.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....7.60
Alton,Ill. L1 .....7.775
Buffalo W12 .....7.60
Cleveland A7 .....7.60
Donora,Pa. A7 .....7.60
Duluth Minn. A7 .....7.60
Jonnstown,Pa. B2 .....7.60
KansasCity,Mo. S5 ....7.85
LosAngeles B3 .....8.55
Minnequa Colo. C10 ...7.775
Monessen,Pa. P16 .....7.60
NewHaven,Conn. A7 ..7.90
Palmer,Mass. W12 .....7.90
Pittsburg Calif. C11 ...8.55
Portsmouth,O. P12 ....7.60
Roebling,N.J. R5 .....7.90
S.Chicago,Ill. R2 .....7.60
S.SanFrancisco C10 ....8.55
SparrowsPoint,Md. B2 .7.70
Struthers,O. Y1 .....7.60
Trenton,N.J. A7 .....7.90
Waukegan,Ill. A7 .....7.60
Worcester,Mass. A7 ....7.90

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....12.725
Bartonville,Ill. K4 ....12.65
Buffalo W12 .....12.55
Chicago W13 .....12.55
Cleveland A7 .....12.55
Crawfordsville,Ind. M8.12.65
Fostoria,O. S1 .....12.55
Jacksonville,Fla. M8 ..13.08
Johnstown,Pa. B2 .....12.55
Kokomo,Ind. C16 .....12.55
Minnequa,Colo. C10 ....12.30
Monessen,Pa. P16 .....12.55
Muncie,Ind. I-7 .....12.75
Palmer,Mass. W12 .....12.85
Roebling N.J. R5 .....12.85
S.SanFrancisco C10 ....12.90
Waukegan Ill. A7 .....12.55
Worcester,Mass.A7,T6 .12.85

WIRE, Gal'd ACSR for Cores

Bartonville,Ill. K4 ....10.70
Bualo W12 .....10.70
Johnstown,Pa. B2 .....10.70
Minnequa,Colo. C10 ..10.825
Monessen,Pa. P16 .....10.70
Muncie,Ind. I-7 .....10.90
Pittsburg,Calif. C11 ...11.50
Portsmouth,O. P12 ....10.70
Roebling,N.J. R5 .....11.00
SparrowsPt.,Md. B2 ...10.80

ROPE WIRE (A)

Bartonville,Ill. K4 .....10.55
Buffalo W12 .....10.55
Fostoria,O.(23) S1 .....10.55
Johnstown,Pa. B2 .....10.55
Monessen,Pa. P16 .....10.55
Muncie,Ind. I-7 .....10.75
Palmer,Mass. W12 .....10.85
Portsmouth,O. P12 .....9.75
Roebling,N.J. R5 .....10.85
SparrowsPt. B2 .....10.65
Struthers,O. Y1 .....10.55
Worcester,Mass. J4 ....10.85

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE
(Continued)

WIRE, Tire Bead

Bartonville,Ill. K4	14.15
Monessen,Pa. P16	14.20
Roebling,N.J. R5	14.35

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	9.00
Baltimore T6	9.30
Buffalo W12	9.00
Cleveland A7	9.00
Crawfordsville,Ind. M8	9.00
Dover,O. G6	9.00
Fostoria,O. S1	9.00
FranklinPark,Ill. T6	9.10
Kokomo Ind. C16	9.00
Massillon,O. R8	9.00
Milwaukee C23	9.20
Monessen,Pa. P16	9.00
Pawtucket R.I. N8	9.30
Riverdale,Ill. A1	9.10
Rome,N.Y. R6	9.00
Trenton,N.J. R5	9.30
Worcester A7, T6, W12	9.30

NAIL, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	152
Aliquippa,Pa. J5	152
Atlanta A11	154
Bartonville,Ill. K4	154
Chicago,Ill. W13	152
Cleveland A9	157
Crawfordsville,Ind. M8	154
Donora,Pa. A7	152
Duluth Minn. A7	152
Fairfield,Ala. T2	152
Galveston,Tex. D7	157
Houston,Tex. S5	157
Johnstown,Pa. B2	152
Joliet Ill. A7	152
KansasCity,Mo. S5	157
Kokomo,Ind. C16	154
Minnequa,Colo. C10	157
Monessen,Pa. P7	152
Pittsburg,Calif. C11	171
Rankin,Pa. A7	152
S.Chicago,Ill. R2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester,Mass. A7	158

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$9.05
Wheeling,W.Va. W10	9.05

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
Aliquippa,Pa. J5	152
Atlanta A11	154
Bartonville,Ill. K4	154
Crawfordsville,Ind. M8	154
Donora,Pa. A7	152
Duluth,Minn. A7	152
Fairfield,Ala. T2	152
Johnstown,Pa. B2	152
Joliet Ill. A7	152
Kokomo,Ind. C16	154
Minnequa,Colo. C10	157
Monessen,Pa. P7	152
Pittsburg,Calif. C11	171
Rankin,Pa. A2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester,Mass. A7	158

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$9.35
Bartonville,Ill. K4	9.45
Buffalo W12	9.35
Crawfordsville,Ind. M8	9.46
Donora,Pa. A7	9.35
Duluth,Minn. A7	9.35
Johnstown,Pa. B2	9.35
Joliet,Ill. A7	9.35
Kokomo,Ind. C16	9.45
LosAngeles B3	10.14
Minnequa,Colo. C10	9.60
Pittsburg,Calif. C11	10.43
S.Chicago,Ill. R2	9.35
SparrowsPt.,Md. B2	9.45
Sterling,Ill. N15	9.35

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$9.65
Bartonville,Ill. K4	9.75
Buffalo W12	9.60
Crawfordsville,Ind. M8	9.75
Donora,Pa. A7	9.65
Duluth,Minn. A7	9.65
Johnstown,Pa. B3	9.65
Joliet,Ill. A7	9.65
Kokomo,Ind. C16	9.75
LosAngeles B3	10.45
Minnequa,Colo. C10	9.90
Pittsburg,Calif. C11	10.13
S.Chicago,Ill. R2	9.65
SparrowsPt.,Md. B2	9.75
Sterling,Ill. N15	9.65

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$9.70
Bartonville,Ill. K4	9.80
Buffalo W12	9.70
Crawfordsville,Ind. M8	9.80
Donora,Pa. A7	9.70
Duluth,Minn. A7	9.70
Johnstown,Pa. B2	9.70
Joliet,Ill. A7	9.70
Kokomo,Ind. C16	9.80
LosAngeles B3	10.50
Minnequa,Colo. C10	9.95
Pittsburg,Calif. C11	10.50
S.Chicago,Ill. R2	9.70
SparrowsPt.,Md. B2	9.80
Sterling,Ill. N15	9.70

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	.175**
Aliquippa J5	172‡
Atlanta A11	181
Bartonville,Ill. K4	181
Crawfordsville,Ind. M8	181
Donora,Pa. A7	175†
Duluth Minn. A7	175†
Fairfield,Ala. T2	175†
Houston Tex. S5	180†
Johnstown,Pa. B2	179*
Joliet,Ill. A7	175†
KansasCity,Mo. S5	180†
Kokomo,Ind. C16	177†
Minnequa Colo. C10	180**
Monessen,Pa. P7	179*
Pittsburg,Calif. C11	195*
Rankin Pa. A7	175†
S.Chicago,Ill. R2	175**
S.SanFrancisco C10	195**
SparrowsPoint,Md. B2	181*
Sterling,Ill.(1) N15	179*

WOVEN Fence, 9-15 Ga.

	Col.
Ala.City,Ala. R2	162**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga J5	165‡
Atlanta A11	168
Bartonville Ill. K4	168
Crawfordsville,Ind. M8	168
Donora,Pa. A7	162†
Duluth Minn. A7	162†
Fairfield,Ala. T2	162†
Houston,Tex. S5	167†
Johnstown,Pa.(43) B2	166
Joliet,Ill. A7	162†
KansasCity,Mo. S5	167†
Kokomo,Ind. C16	164†
Minnequa,Colo. C10	167**
Monessen Pa. 9 ga. P17	166*
Pittsburg,Calif. C11	185†
Rankin,Pa. A7	162†
S.Chicago,Ill. R2	162**
Sterling,Ill.(1) N15	166*

	An'ld Stone	Galv. Stone
WIRE (16 Gage)		
Ala.City R2	14.50	16.05**
Bartonville K4	14.60	16.50
Buffalo W12	14.50	....
Cleveland A7	14.50	....
Crawf'dsville M8	14.60	16.50
Fostoria,O. S1	14.60	16.15†
Johnstown B2	14.15	16.40*
Kokomo C16	14.60	16.15†
Minnequa C10	14.75	16.45**
Palmer,MassW12	14.50	16.05*
Pitts.,Calif. C11	14.85	16.40†
S.Chicago R2	14.50	16.05**
SparrowsPt. B2	14.60	16.50*
Sterling(1) N15	14.50	16.45††
Waukegan A7	14.50	16.05†
Worcester A7	14.80	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	7.40	7.80**
Aliquippa J5	7.40	7.925‡
Atlanta A11	7.50	8.075
Bartonville(48) K4	7.50	8.075
Buffalo W12	7.40	8.80†
Cleveland A7	7.40	....
Crawfordsville M8	7.50	8.075
Donora,Pa. A7	7.40	7.80†
Duluth,Minn. A7	7.40	7.80†
Fairfield T2	7.40	7.80†
Houston,Tex. S5	7.65	8.05†
Jacks'ville,Fla.M8	7.90	8.475
Johnstown B2(48)	7.40	7.975*
Joliet,Ill. A7	7.40	7.80†
KansasCity,Mo. S5	7.65	8.05†
Kokomo C16	7.50	7.90†
LosAngeles B3	8.35	8.925*
Minnequa C10	7.65	8.05**
Monessen P7 (48)	7.40	7.975*
Palmer Mass. W12	7.70	8.10†
Pitts.,Calif. C11	8.35	8.75†
Portsmouth,O. P12	7.40	....
Rankin A7	7.40	7.80†
S.Chicago R2	7.40	7.80**
S.SanFran. C10	8.35	8.75**
Spar'wsPt.B2(48)	7.50	8.075*
Stir'ling(1)(48)	N15 7.40	8.00††
Struthers,O.(48)	Y1 7.40	7.90‡
Worcester,Mass.	A7 7.70	....

*Based on 12.50c zinc; †5c zinc; ‡10c zinc; †Less than 10c zinc; **Subject to zinc equalization extras. ††13c zinc.

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	.157
Duluth,Minn. A7	.157
Franklin,Pa. F5	.157
Huntington,W.Va. W7	.157
Johnstown,Pa. B2	.160
Marion,O. P11	.157
Minnequa,Colo. C10	.162
Moline,Ill. R2	.162
S.Chicago,Ill. R2	.157
Tonawanda,N.Y. B12	.157
Williamsport,Pa. S10	.160

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(Base discounts, less case lots, per cent off list, f.o.b. midwestern plants)

4" and shorter:	
½" & smaller diam.	+5
Over 4" through 6":	
½" and smaller diam.	+12
6" and shorter:	
⅝" and ¾"	+13
⅞" and larger	+16
Longer than 6":	
All diameters	+25
Lag bolts, all diams:	
6" and shorter	+ 2
Over 6" long	+11
Ribbed Necked Carriage	+13
Blank	2
Plow	18
Step Elevator, Tap and Sleigh Shoe	2
Tire Bolts	12
Boiler & Fitting-Up Bolts	14

NUTS

H.P. and C.P., regular & heavy:	
¾" and smaller	51
H.P., Hex. regular & heavy:	
¾" and smaller	55
⅞" to 1¼", inclusive	55
1⅛" to 1½", inclusive	57
1⅝" and larger	51
C.P. Hex regular & heavy:	
¾" and smaller	55
Larger than ¾"	51
Hot Galv. Nuts (all types):	
¾" or smaller	31
⅞" to 1¼", inclusive	36
Finished Hex Nuts:	
¾" and smaller	55
⅞" and larger	51
Sem'finished & Slotted Hex:	
Regular and heavy,	
¾" and smaller	55
⅞" and larger	51

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages; plain finish)

3" and shorter:	
⅛" thru ⅜" diam, 25,000 to 200,000 pieces	61
Over 200,000 pieces	64
⅞" thru ½" diam: 15,000 to 100,000 pieces	61
100,000 or more	64
Longer than 3", any diam: 5000 to 100,000 pieces	61
Over 100,000 pieces	64

SQUARE HEAD SET SCREWS
(1035 steel; packaged; per cent off list)

1" diam x 6" and shorter	19
1" and smaller diam x over 6"	List

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)

6" or shorter:	
¼" through ½"	34
⅝" & ⅝" & shorter	31
¾", ⅞" through 1 in.	8

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.06	20.41
1¼	13	....	24.94	20.44
1½	13	23.31	27.57	22.60
1¾	13	27.54	32.57	26.71
2	13	30.87	36.51	29.93
2¼	13	34.77	41.12	33.72
2¼	12	37.73	44.63	36.59
2½	12	41.57	49.16	40.31
2¾	12	45.00	53.22	43.65
3	12	47.99	56.76	46.54

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.725	4.625	4.675	5.65
Ensley,Ala. T2	4.725	4.625	...	5.65
Fairfield,Ala. T2	...	...	...	5.65
Gary,Ind. U5	4.725	...	...	...
Huntington W.Va. W7	...	...	...	5.65
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...	(16)5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	4.725	4.625	...	6.15
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2	5.625
Gary,Ind. U5	5.625
Ind.Harbor,Ind. I-2	5.625
Lackawanna,N.Y. B2	5.625
Minnequa,Colo. C10	5.625
Seattle B3	5.775
Steelton,Pa. B2	5.625
Torrance,Calif. C11	5.775

TRACK BOLTS (20) Treated

Cleveland R2	12.40
KansasCity,Mo. S5	12.40
Lebanon,Pa. B2	12.40
Minnequa,Colo. C10	12.40
Pittsburgh O3, P14	12.40
Seattle B3	12.90

AXLES

Ind.Harbor,Ind. S13	7.25
Johnstown,Pa. B2	7.25

JOINT BARS

Bessemer,Pa. U5	5.825
Fairfield,Ala. T2	5.825
Ind.Harbor,Ind. I-2	5.825
Joliet,Ill. U5	5.825
Lackawanna,N.Y. B2	5.825
Minnequa,Colo. C10	5.825
Steelton,Pa. B2	5.825

SCREW SPIKES

Cleveland R2	11.90
Pittsburgh O3	11.90

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.90
Ind.Harbor,Ind. I-2, Y1	7.90
KansasCity,Mo. S5	7.90
Lebanon,Pa. B2	7.90
Minnequa,Colo. C10	7.90
Pittsburgh J5	7.90
Seattle B3	8.40
S.Chicago,Ill. R2	7.90
Struthers,O. Y1	7.90
Youngstown R2	7.90

METAL POWDER

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.l.f. Camden, N. J., c.l. in bags	9.50
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	22.00
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drum, frght. allowed	
Carlots	34.50
Ton lots	36.50
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	38.00-50.00†
Bronze, 5000-lb lots	61.50-64.75†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	58.75-62.75†
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50*
Zinc, 5000-lb lots	18.75-32.50‡
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.50
Less than 1000 lb	4.65
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago Base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(6) To jobbers, 3 cols. lower.
(7) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) Mild plow, 10.55c.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 5.10c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over ⅝-in.; 6.90c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.25c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Ambridge, Pa. N2	6.5	...	10.5	...	13	...	14.5	...	14.5	...	14	...	16.5	...
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	23	7.75	25.5	7
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Etna, Pa. N2	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Fairless Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	7
Fontana, Calif. K1	...	...	....	....	....	....	6	+11.25	9	+7.25	11.5	+3.75	14	+2.5
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	8
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sparrows Pt., Md. B2	15.5	+13	7	+18.5	+1.5	+26	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Wheatland, Pa. W9	17.5	+11	9	+16.5	0.5	+24	17.5	0.25	20.5	4.25	23	7.75	25.5	9

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	...	....	...
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Etna, Pa. N2	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.25
Fontana, Calif. K1	14.5	+1.5	15	+1	16.5	+0.75	16.5	+0.75	7	+10.75	7	+10.75
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+0.25
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sparrows Pt., Md. B2	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.25
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Wheatland, Pa. W9	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75

*Galvanized pipe discounts based on current price of zinc (13.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
201	17.00	21.50	....	....	31.00	....	....	42.25	39.00
202	18.25	24.00	31.00	36.25	33.50	36.75	38.75	42.50	42.50
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	47.00	47.00
303	....	26.75	34.75	40.00	....	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	38.75	44.00	42.25	45.25	48.00	52.25	52.25
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.25	64.75	63.25	65.75	69.25	73.25	73.25
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	29.25	38.00	45.75	52.25	53.25	53.50	58.00	66.50	66.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co., Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base, 10%	Plates, Carbon Base, 20%	Sheets, Carbon Base, 20%
Stainless:			
302	....	....	30.50
304	30.30	36.05	32.50
304-L	32.30	37.95	....
310	41.30	47.00	....
316	35.50	41.40	47.00
316-L	40.00	46.10	....
316-CB	41.15	48.45	....
321	32.00	37.75	37.25
347	34.40	41.40	48.25
405	25.80	33.35	....
410	25.30	32.85	....
430	25.30	32.85	....
Inconel	49.45	65.45	....
Nickel	41.05	55.65	....
Nickel, Low Carbon	43.25	60.05	....
Monel	42.35	56.35	....
Copper*	....	....	46.00

	Strip, Carbon Base, Cold Rolled, 10%	Strip, Carbon Base, Cold Rolled, Both Sides
Copper*	30.00	38.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular carbon	0.275	5%Cr Hot Work	0.430-0.460
Extra Carbon	0.330	W-Cr Hot Work	0.450
Special Carbon	0.390	V-Cr Hot Work	0.470
Oil Hardening	0.430	Hi-Carbon-Cr	0.770

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.090
18.25	4.25	1	4.75	...	2.305-2.475
18	4	2	9	...	2.675-2.6775
18	4	2	....	...	1.765
18	4	1	....	...	1.600
13.75	3.75	2	5	...	2.245
13.5	4	3	....	...	1.865
9	3.5	..	....	...	1.180
6	4	2	....	5	1.105
6	4	3	....	6	1.350
1.5	4	1	....	8.5	0.960

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
AlabamaCity,Ala. R2	54.50	55.00‡	....	....
Birmingham R2	54.50	55.00‡	....	....
Birmingham U6	....	55.00‡	59.00	....
Woodward,Ala. W15	54.50	55.00‡	59.00	....
Cincinnati, deld.	....	62.70	....	....
Buffalo District				
Buffalo H1, R2	58.50	59.00	59.50	60.00
Tonawanda,N.Y. W12	58.50	59.00	59.50	60.00
N.Tonawanda,N.Y. T9	....	59.00	59.50	60.00
Boston, deld.	69.15	69.65	70.15	....
Rochester,N.Y. deld.	61.52	62.02	62.52	....
Syracuse,N.Y. deld.	62.62	63.12	63.62	....
Chicago District				
Chicago I-3	58.50	59.00	59.00	59.50
Gary,Ind. U5	58.50	....	59.00	....
S.Chicago R2	58.50	....	59.00	....
S.Chicago,Ill. Y1	58.50	59.00	59.00	59.50
S.Chicago,Ill. U5, W14	58.50	....	59.00	59.50
Milwaukee, deld.	60.67	61.17	61.17	61.67
Muskegon,Mich. deld.	....	65.30	65.30	....
Cleveland District				
Cleveland A7, R2	58.50	59.00	59.00	59.50
Akron,O., deld.	61.25	61.75	61.75	62.25
Lorain,O. N3	58.50	....	....	59.50
Mid-Atlantic District				
Bethlehem,Pa. B2	60.50	61.00	61.50	62.00
NewYork, deld.	....	64.78	65.28	....
Newark, deld.	63.52	64.02	64.52	65.02
Birdsboro,Pa. B10	60.50	61.00	61.50	62.00
Chester,Pa. C31	54.50	55.00	55.50	....
Philadelphia, deld.	56.16	56.66	57.16	....
Steelton,Pa. B2	60.50	61.00	61.50	62.00
Swedeland,Pa. A3	60.50	61.00	61.50	62.00
Philadelphia, deld.	62.16	62.66	63.16	63.66
Troy,N.Y. R2	60.50	61.00	61.50	62.00
Pittsburgh District				
NevilleIsland,Pa. P6	58.50	59.00	59.00	....
Pittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
McKeesRocks, deld.	....	60.04	60.04	60.54
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	60.66	60.66	61.16
Verona,Trafford, deld.	60.69	61.19	61.19	61.69
Brackenridge, deld.	60.95	61.45	61.45	61.95
Bessemer,Pa. U5	58.50	....	59.00	59.50
Clairton,Rankin,S.Duquesne,Pa. U5	58.50	....	....	....
McKeesport,Pa. N3	58.50	....	....	59.50
Midland,Pa. C18	58.50	....	....	....

Youngstown District	Basic	No. 2 Foundry	Malle-able	Besse-mer
Hubbard,O. Y1	....	....	59.00	....
Sharpsville,Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	....	....	59.50
Mansfield,O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie,Pa. I-3	58.50	59.00	59.00	59.50
Everett,Mass. E1	62.00	62.50	63.00	....
Fontana,Calif. K1	64.50	65.00	....	....
Geneva,Utah C11	58.50	59.00	....	....
GraniteCity,Ill. G4	60.40	60.90	61.40	....
Ironton,Utah C11	58.50	59.00	....	....
LoneStar,Texas L6	....	55.00*	....	....
Minnequa,Colo. C10	60.50	61.00	61.50	....
Rockwood,Tenn. T3	....	55.00‡	59.00	....
Toledo,O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	..	....

*Phos. 0.51-0.75%; $56, Phos. 0.31-0.50%.
‡Intermediate (Phos. 0.31-0.69%), $56.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$67.50
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2)	*90.00*
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	*93.00*

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$72.50
Steelton,Pa. B2 (Phos. 0.035% max)	66.50
Philadelphia, deld.	70.05
Troy,N.Y. R2 (Phos. 0.035% max)	66.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	63.50

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 25 cents per 100 lb except: Buffalo, Cleveland, Erie, 30 cents; Moline, Norfolk, Richmond, Washington, 20 cents; Birmingham, Chattanooga, Jackson, 15 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, San Francisco, 10 cents; Atlanta, Houston, Seattle, Spokane, no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.§	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	7.14	8.20	8.87	....	7.40	...	7.42	9.39	....	7.63	7.49	9.48
Baltimore	7.03	8.32	8.37	....	7.65	...	7.61	8.62§	13.44	7.93	7.21	8.87
Birmingham	6.80	7.90	8.85	....	7.06	...	7.08	9.35	....	7.28	6.99	9.10
Boston	7.70	8.81	10.27	45.67	7.96	...	7.83	9.53	14.45	8.13	7.89	9.36
Buffalo	6.80	8.05	9.77	....	7.15	...	7.10	7.90	13.10	7.40	7.15	8.70
Chattanooga	6.95	8.10	8.60	....	7.20	...	7.20	9.15	....	7.45	7.25	9.05
Chicago	6.80	8.09	8.50	49.05	7.06	...	7.08	7.75	12.85	7.28	6.99	8.46
Cincinnati	6.92	8.08	8.90	46.10	7.30	...	7.32	8.05	13.09	7.75	7.28	8.71
Cleveland	6.80	8.09	8.85	49.16	7.16	...	7.14	7.85	12.91	7.61	7.16	8.63
Detroit	6.99	8.28	8.78	43.50	7.34	...	7.36	8.04	13.05	7.75	7.27	8.65
Erie, Pa.	6.80	7.90	8.85	....	7.15	...	7.08	7.85	....	7.40	7.15	8.63
Houston	7.85	8.75	10.49	....	8.15	...	8.25	9.85	14.09	8.20	7.80	9.20
Jackson, Miss.	7.10	8.20	9.20	....	7.40	...	7.40	9.44	....	7.60	7.45	9.30
Los Angeles	8.05	10.00	11.00	....	8.35	...	8.05	11.25	14.25	8.30	8.05	10.25
Milwaukee	6.89	8.18	8.59	....	7.15	...	7.17	7.94	12.94	7.45	7.08	8.55
Moline, Ill.	7.15	8.44	8.85	....	7.41	...	7.43	8.10	....	7.63	7.34	...
New York	7.46	8.68	9.44	44.95	8.07	...	7.96	9.48	13.28	7.99	7.76	9.19
Norfolk, Va.	7.25	...	...	....	7.65	...	7.65	9.50	....	7.95	7.45	8.95
Philadelphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69**
Pittsburgh	6.80	8.09	9.20	49.00	7.16	...	7.08	7.85	12.85	7.28	6.99	8.46
Portland, Oreg.	7.80	8.80	10.65	....	8.00	...	7.95	12.20	15.00	7.85	7.75	9.60
Richmond, Va.	7.00	...	9.47	....	7.65	...	7.70	8.85	....	7.95	7.20	9.10
St. Louis	7.09	8.38	9.19	43.89	7.35	...	7.37	8.14	13.14	7.68	7.28	8.75
St. Paul	7.46	8.59	9.16	....	7.72	...	7.74	8.51	13.51	7.94	7.65	9.12
San Francisco	8.10	9.65	10.15	51.65	8.35	...	8.05	11.20	14.25§	8.25	8.05	10.25
Seattle	8.55	10.40	10.80	54.00	8.65	...	8.35	11.70	14.60	8.30	8.20	10.10
Spokane	8.55	11.00¶	10.80	....	9.05	...	8.35	11.80	15.35	8.30	8.20	10.60
Washington	7.50	8.79	7.97	....	8.12	...	8.08	9.09	....	8.40	7.68	9.34

Prices do not include gage extras; †prices include gage and coating extras (based on 12.50-cent zinc), except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **¼-in. and heavier; ††as annealed; ‡‡under ½-in.

Base quantities, 2000 to 4999 lb except as noted; Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; §—500 to 9999 lb; ¶—400 to 999 lb; ‖—4000 lb and over; ‖—1000 to 1999 lb; ‖—1000 lb and over; ‖—1500 to 3999 lb; ‖—2000 to 3999 lb; ‖—f.o.b. local delivery in lots of 10,000 lb and over.

At Detrex Corporation, Detroit, workman slips a snug fitting Johnson Bronze Bearing into place on the shaft of an idler arm of this compact Rotary Gyro Degreaser. Idler arms move in "ferris wheel" motion to rotate heavy baskets filled with parts to be degreased.

How Detrex Prevents A Maintenance Problem With Johnson Bearings

The Detrex Corporation, Detroit, manufactures a full line of unique, automatic degreasers, washers, drycleaning and other equipment to speed production, save time and money for many industries where removing oil and grease from parts and materials is a problem.

On the idlers of the totally enclosed Rotary Gyro Degreaser shown being assembled above, Johnson Bronze General Purpose Bearings give years of trouble-free service.

As a Detrex executive puts it: "When we sell a machine we want the customer to forget about shut-downs to repair some trivial part that's failed, so we design every part, choose every piece of material with one thought in mind: make it better to last longer. It's the reason we have specified Johnson Bronze General Purpose Bearings wherever bearings of this type will do the job."

Detrex depends upon a Johnson distributor in that area for service on their bearing requirements. They have found his stocks to be adequate to meet their requirements and know that even in emergencies the bearings they need will be delivered when they want them.

Johnson General Purpose Bearings are available from stock in over 900 sizes. Alterations such as oil grooves, slots, or holes are easily and quickly made. They are cast in Johnson's famous, high grade bearing bronze alloy No. 72. For complete information on prices and delivery, call your Johnson distributor. Johnson Bronze Co., 550 South Mill Street, New Castle, Pa.

Johnson Bearings

GRAPHITED
over 175 sizes

GENERAL PURPOSE
over 900 sizes

UNIVERSAL BRONZE BARS
over 400 sizes

LEDALOYL
over 400 sizes

ELECTRIC MOTOR
over 350 sizes

Aluminum gets dressed up like a rainbow as . . .

Color Comes to Alcoa

COLORED ALUMINUM is coming of age! You can buy it directly from the mill.

Aluminum Co. of America, Pittsburgh, is offering two types of color-anodized aluminum in a full range of mill products: Decorative finishes in red, blue, green, gold and natural aluminum; and architectural finishes in gold and brown and shades of gray, blue, yellow and black. They are available in sheet, tube, extruded shapes and fasteners.

First Pitch—This is the initial bid by any aluminum producer for this market. Reynolds Metals Co., Louisville, has offered colored stock to its customers for several years, but it has been on an inquiry basis. Kaiser Aluminum & Chemical Corp. is working with colored aluminum in its Division of Metallurgical Research in Spokane, but it does not produce any colored stock itself.

Before Alcoa's announcement, most colored aluminum was done on a job-shop basis after the plain stock had been purchased by the fabricator. By eliminating this in-between step, Alcoa feels it can save the fabricator money and improve the product by maintaining closer control on dye variations.

Inseparable—Color anodized aluminum is more expensive than ordinary stock because of the extra step in its manufacture. An electrochemical process produces an aluminum oxide coating on the surface of the metal. This coating is impregnated with color, so the color finish is part of the metal. The time required for this anodizing bath determines the price. It is estimated that 1 sq ft of building panel will cost from 40 to 45 cents, compared with 35 to 38 cents for plain panels.

This means, of course, that the fabricator will be generating more expensive scrap. But Alcoa officials do not feel this will be a serious drawback.

Seek Better Ductility—One of the toughest problems to solve has been the poor workability imposed by the hardness of the oxide coating. Alcoa claims fair-to-good forming characteristics for some types. F. J. Close, market development manager, believes it can be used for automobile wheel discs or covers for cooking utensils. Alcoa has had inquiries about such applications as lunch buckets and fishing tackle. Some observers hint that the time is not far off when the laboratories will come up with an oxide coating ductile enough to withstand such severe forming operations.

The biggest market probably will be in building panels. About 35 buildings which have been or are being built use the material. The outdoor furniture market looms large as a user of colored tubing. Refrigerator and auto trim markets are expected to use large tonnages of the new product.

Other possible markets are for bus and train exteriors, appliances, handrails, storm windows and even automobile tops. Alcoa also hopes to offer a maintenance-free home in the future using colored aluminum.

Sizes—Drawn and extruded tube and extruded shapes, rod and bars are available in lengths up to 30 ft. Flat sheet is available in widths up to 84 in. and lengths up to 32 ft in thicknesses subject to commercial rolling limitations. Coiled sheets are available only in the decorative finish in widths up to 24 in. and thicknesses from 0.006 to 0.051 in. inclusive.

Steel Bars . . .

Bar Prices, Page 164

Most producers of hot-rolled carbon bars are setting up allotments for the first quarter. In some cases bookings are not being accepted for the entire period, being on a month-to-month basis.

The mills are blanking out a substantial part of their first quarter production to care for anticipated carry-over orders from the fourth quarter. Some makers think they will be lucky if they are able to apply more than two months of output in the first qurter against new orders. Currently, shipments in some instances are as much as two months behind schedule.

The situation in cold-drawn bars is reported spotty. On some of the popular sizes and grades cold drawers in the East have little or no hot-rolled stock on hand to apply to new orders. They are extended on their delivery promises.

Some hot alloy bar tonnage is available for delivery this year, depending on size and grade. One large eastern seller says it can book nothing under ⅞-in. rounds for delivery this year. On certain of the larger sizes this maker can work in tonnage for late November shipment.

New England consumers report a Pittsburgh producer has opened and closed its first quarter books on district hot-rolled tonnage, booking less than 50 per cent of its normal area volume for the period.

Integrated mills can get out standard sizes of cold finished for November delivery. They are picking up some orders from converters, indicating the latter are becoming pinched for hot-rolled stock.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 165 & 166

"The fourth quarter is behind us, and we are beginning to worry about filling our customers' first quarter needs," says the sales manager of a large Pittsburgh sheetmaker.

Indications are that the delivery situation in sheets in early first quarter, 1956, will be about as tight as it is in the current delivery period. That's especially true with respect to automotive tonnage; the auto builders are expected to provide continued strong demand going into the new year.

A major sheet producer had its district sales offices check into consumers' inventories early this month. The survey showed no customer was overstocked. Most appeared to have substantial supplies, but all steel on hand was needed for fourth quarter production. Stocks of cold-rolled

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seemed to be more complete than inventories of hot-rolled sheets and strip.

Most sheet producers are entering orders on their books for first quarter shipment. In general, they are allowing a liberal portion of production in the period to care for carry-over business from the fourth quarter. This means placements for first quarter will not be so heavy as consumers would like. An eastern mill blanked out January production on hot-rolled but is accepting orders for that month in cold strip, figuring it will be current on that item.

The general disposition among sheetmakers is to accept commitments for the entire first quarter, at least as much of the period as carry-over tonnage will permit. One maker of electrogalvanized sheets is allotting January production for arrearages.

Stainless Steel . . .

Stainless Steel Prices, Page 168

Soft prices on nickel-bearing stainless steel developed in the purchase of more than 750 tons, grade 305, by a Portland, Me., shop. Warehouses quoted under mill prices, mills being off in some cases. Tonnage included mostly $\frac{1}{4}$-in. plates and 12-gage sheets, large quantities of one size. The orders totaled about $500,000 and were rated volume for Navy minesweeper equipment. Scrap from the fabricating operation will go back to the mill suppliers of the steel.

The only deterrent to maximum production in the fourth quarter will be the continuing shortage of nickel, producers say. Sales for the fourth quarter appear strong to all consumers.

Following recent publicity about new designs of passenger cars, there has been gradual improvement in stainless sales to railroad carbuilders. Most new designs incorporate larger amounts of stainless, but in most cases carbuilders using steel have been doing so for many years. However, there are increasing applications of stainless inside passenger cars, in trim and on doors.

Plates . .

Plate Prices, Page 164

While some of the plate mills have opened their books for first quarter orders, others are still going through the process of getting ready to do so. One eastern producer hasn't started to take orders for December shipments; when it does, it may open its books for January tonnage as well. The extent of carry-overs at year end will vary, depending upon producers' booking policies.

The Claymont, Del., producer may not get the larger of its two mills back into operation before the end of this month. This unit has been down for repairs since July, except for a few hours operation in September.

Fabricating shops in New England are more concerned over near-future tonnage. Heavy volume consuming requirements are creeping up, notably railroad car and defense needs. An increasing proportion of demand is for military and naval contracts. Numerous consumers are uncertain as to how much tonnage will be available for first quarter.

Shipbuilding will take more plates next quarter with additional contracts, including one super aircraft carrier, soon to be closed; also three tower radar platforms in Texas.

There's no letup in demand for plate from machinery builders, miscellaneous jobbers or railroads, Pittsburgh producers report. Inventories in plants of all major consumers are low.

As some emergency requests come from construction firms, premium-priced plate has entered the Pittsburgh area from the East.

Structural Shapes . . .

Structural Shape Prices, Page 164

Structural shape requirements continue well in excess of supply, even after taking into consideration some leveling off in building construction. However, a heavy volume of work is still in prospect.

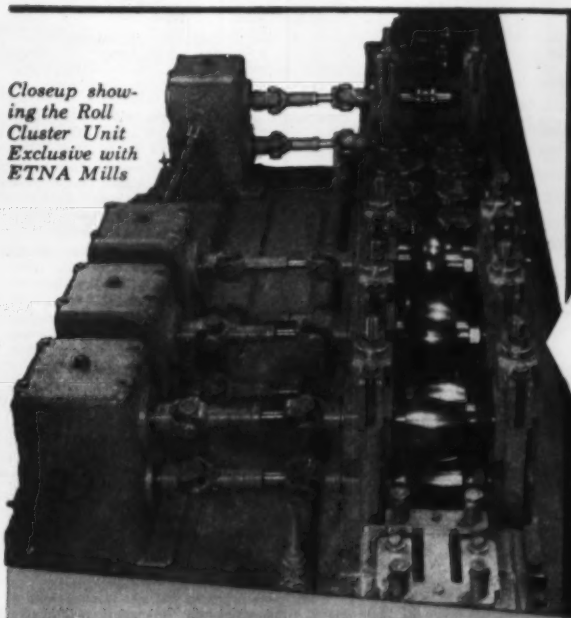
Producers of shapes are still running behind on commitments. Indications are, at least as far as wide flange sections are concerned, they will not be current before February at the earliest. To date, the leading shape producers have not opened books for the first quarter.

Most of the large and medium-sized fabricating shops are booked well ahead, and, in view of the continued shortage of plain material, are selective in their bidding.

New business is heavy. Tremendous jobs are in prospect. Serious consideration is being given to the construction of a second roadway for the George Washington bridge over the Hudson river, requiring 30,000 tons. Some trade interests believe this project may become alive next spring, but, admittedly, much planning has to be given to the construction of additional roadways to handle the extra traffic on both sides of the Hudson.

Another large job in that district is the Narrows bridge between Staten Island and Brooklyn, N. Y., estimated to require 180,000 tons of steel, including 30,000 tons of cable. This

LEADING THE INDUSTRY IN DESIGN...



Closeup showing the Roll Cluster Unit Exclusive with ETNA Mills

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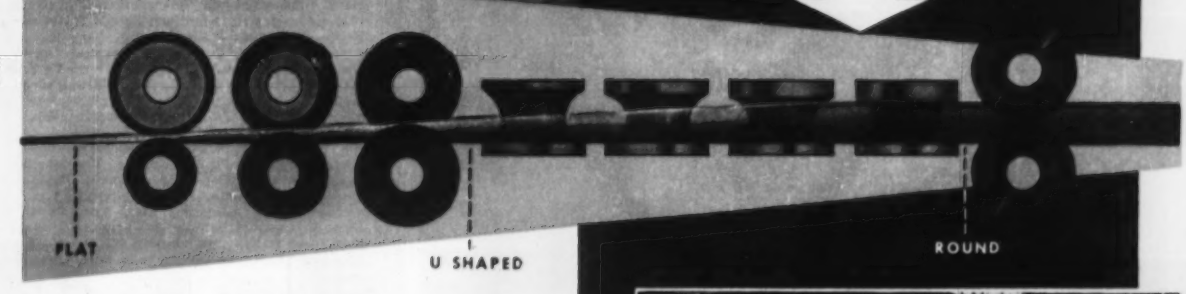
FOR SMOOTH, WELL FORMED STEEL TUBING



Exclusive with Etna is the cluster unit. This unit progressively rolls the tube into shape without excessive stretching of the edges, thereby eliminating the "buckling" experienced with ordinary tube mills. Etna machines are not forming mills, they are designed for one purpose only . . . to make clear, well formed carbon and stainless steel tubing with no marking, no scratching, no upset edges. Write for complete details.

The ETNA 4KU Mill

Abbey ETNA Company

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also is many months away, but is gradually shaping up.

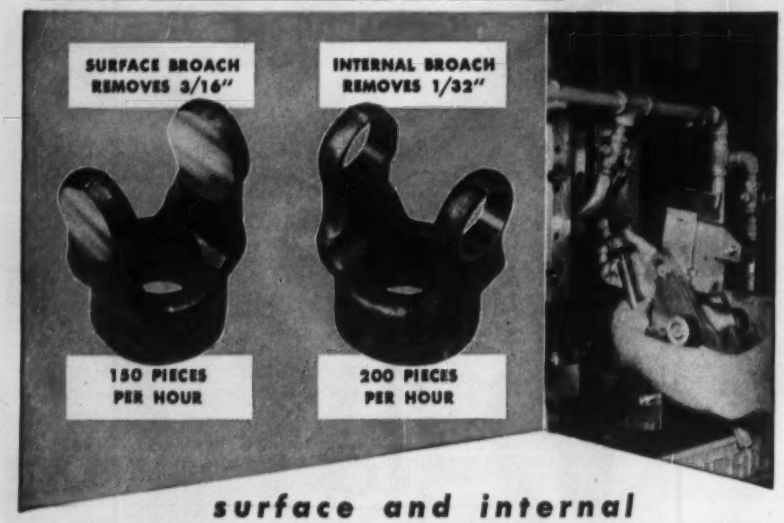
The biggest project of all, that of Webb & Knapp in the Pennsylvania Railroad terminal area, New York, is in the planning stage. This will require about 190,000 tons, plus or minus a few thousand.

For 50 replacement bridges, Massachusetts has received bids on prestressed concrete beams, including 115,000 lb of ⅜-in. prestress strand. Extended delivery on fabricated structural steel is one factor in going to prestressed beams, f.o.b. Worcester, Mass. For bridges, delivery in the second quarter of next year, estimating is heavier.

First contracts for Connecticut's Greenwich-Killingly highway total 14,000 tons. School and industrial requirements for light structurals and long-span joists are heavier, with plain material in those sizes and shapes more extended.

On the West Coast, a substantial increase in homebuilding has taken up the slack caused by reduced highway construction. For structural producers, this means an about-face in their planning, but a possible increase in fourth-quarter sales.

one *American* broaching machine

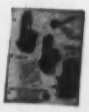


surface and internal broaching possible with *American* 3-way machine

To broach the lugs and cross holes of a universal joint, American engineers designed a combination tooling set-up on a standard American T-10-36 3-way machine.

Arranged with 3 stations, the machine surface broaches 3/16 stock off the inside and outside surfaces of the lugs at the center station; or broaches 1/32 off the I. D. of the lug cross holes at the two outer stations.

For more information on your particular broaching problem send a part-print or sample and hourly requirements. Address Dept. S.



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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3700 tons, plant project in the south to Belmont Iron Works, Eddystone, Pa.

3600 tons, office structure, CIT Corp., Madison Ave. and 59th St., New York, to Harris Structural Steel Co., New York.

2040 tons, 905-ft span, bridge superstructure, Greenwich-Killingly expressway, Norwalk river, Norwalk, Conn., to Klevins Corp., Yonkers, N. Y., $1,191,065, bids Sept. 26, Hartford, Conn.; also, 335 tons, concrete reinforcing bars. 270 tons, building addition, American Cyanamid Co., Wallingford, Conn., to American Bridge Div., U. S. Steel Corp.

2000 tons, state thruway work, Chatauqua county, N. Y., through Bates & Rogers, general contractor, Buffalo, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

1600 tons, state thruway work, Erie county, Pa., through Yonkers Contracting Co., general contractor, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

1300 tons, Hollingsworth-Whitney Division, Scott Paper Co., Mobile, Ala., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

1200 tons, state bridge, Berks county, Pa., through F. D. Kessler, general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

1100 tons, power plant extension, United Illuminating Co., Bridgeport, Conn., to Pittsburgh Bridge & Iron Co., Pittsburgh.

1000 tons, laboratory, Bakelite Division, Union Carbide & Carbon Corp., Bound Brook, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

855 tons, manufacturing plant, Hinde & Dauch Paper Co., Eaton, O., to Pittsburgh Bridge & Iron Works, Pittsburgh.

620 tons, state highway bridge, Oneida county, N. Y., through Lane Construction Co., general contractor, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

620 tons, pavilion, St. Luke's Hospital, Amsterdam Ave. and 113th St., New York, through John Lowry Inc., to White Plains Iron Works, White Plains, N. Y.

550 tons, contract G-5, approach work, Philadelphia-Gloucester bridge to be known as the Walt Whitman bridge, Delaware River Port Authority, through F. A. Canuso & Sons Inc., Philadelphia, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

483 tons, gates, stoplogs, etc., The Dalles dam, to Food Machinery & Chemical Corp., San Jose, Calif., low at $205 927, to U. S. Engineer, Portland, Oreg.; bids were opened Sept. 2.

380 tons, junior high school, Roslyn, N. Y., through John Elsele, general contractor, to Grand Iron Works, Bronx, New York.

315 tons, plastics manufacturing plant, Sylvania Electric Products Inc., Warren, Pa., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

300 tons, state highway bridge, Saratoga county, N. Y., through Lane Construction Co., to Ernst Iron Works, Buffalo.

250 tons, laboratory, American Cyanamid Co., Bound Brook, N. J., to Savary & Glaeser, Bound Brook.

240 tons, state bridge, Northampton county, Pa., through Keelor Construction Co., general contractor, to Mayer Pollock, Pottstown, Pa.

215 tons, office building, National Grange Liability Co., Syracuse, N. Y., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

200 tons, additional award, Alcoa plant expansion, Wenatchee, Wash., to Pacific Car & Foundry Co., Seattle.

160 tons, central boiler plant, engine laboratory, Middletown, Conn., to Standard Structural Steel Co., Hartford, Conn.

STRUCTURAL STEEL PENDING

2000 tons, power plant, Schuylkill station, Philadelphia Electric Co., Philadelphia; bids asked.

1305 tons, seven overpass structures, Greenwich-Killingly expressway, Stratford-Milford, Conn.; also 875 tons of steel piling.

1300 tons, seven overpass structures, Greenwich-Killingly expressway, Stratford-Milford, Conn.; bids Oct. 17, Hartford, Conn.

765 tons, stoplogs, headworks and tailrace, Ontario hydro power house, St. Lawrence

Seaway project; bids Oct. 25, Toronto, Ont.
500 tons, RCA factory building, Bridgewater, N. J.; pending.
385 tons, state bridge, Lycoming county, Pa.; bids Oct. 28.
375 tons, also 22 tons of reinforcing, 574-ft Montana state bridge, Yellowstone river; general contract to W. P. Roscoe Co., Billings, Mont., low at $294,479.
335 tons, also 40 tons of reinforcing, Green river bridge, Gorge dam project, Washington state; bids will be called late in October by U. S. Engineer, Seattle.
193 tons, Allegheny county, Pa.; bids Oct. 27; also 544 tons of reinforcing bars.
175 tons, including bearing piles, steel beam bridge, Spaulding turnpike, Dover, N. H.

REINFORCING BARS . . .

REINFORCING BARS PLACED

2890 tons, tunnel section, Fitzgerald expressway, Boston, Oliver-Kneeland streets, to Bethlehem Steel Co., Bethlehem, Pa.; V. Barletta Co., Boston, general contractor.
1200 tons, grade crossing elimination, Boston & Maine Railroad, state project, Salem, Mass., to Concrete Steel Co., Boston; Farina Bros. Inc., Watertown, Mass., general contractor.
850 tons, state highway bridges, Southeast expressway, Boston-Milton, Mass., to Milton Steel Co., Milton, Pa.; Savin Construction Co., East Hartford, Conn., general contractor.
500 tons, power plant extension, Western Massachusetts Electric Co., West Springfield, Mass., to Concrete Steel Co., Boston; Stone & Webster Engineering Corp., Boston, engineer-contractor.
410 tons, water reservoir, Tacoma, Wash., to Soule Steel Co., Seattle; general contract to Ostruske-Murphy Co., Tacoma, low at $630,755.
335 tons, admissions treatment building, state hospital, Taunton, Mass., to the Concrete Steel Co., Boston; Joseph Rugo Inc., Boston, general contractor.
315 tons, building, state hospital, Waltham, Mass., to Joseph T. Ryerson & Son Inc., Boston; Park Construction Co., Boston, general contractor.

REINFORCING BARS PENDING

1365 tons, flood control project, Hoosic Basin, North Adams, Mass., Corps of Engineers, Boston; Petricca Construction Co., Pittsfield, Mass., low on general contract.
1130 tons, Robinson Bay lock, St. Lawrence Seaway project, St. Lawrence, N. Y.; plans ready shortly, Corps of Engineers, Buffalo.
1040 tons, substructure of bridge, Housatonic river, Stratford-Milford, Conn.; also 1800 tons of steel piling.
1000 tons, highway viaduct extension, Seattle; general contract to Rumsey & Co., Seattle, low at $727,654; piling also involved to be state furnished.
875 tons, Greenwich-Killingly expressway, Stratford-Milford, Conn.
615 tons, piers, Morrison street bridge, Portland, Oreg.; general contract to Manson Construction & Engineering Co., Seattle, low at $1,937,480.
544 tons, state bridge work, Allegheny county, Pa.; bids Oct. 27; also 193 tons of shapes.
450 tons, Washington state overhead girder bridge, King county; general award to Anderson Bridge Construction Co., Tacoma, Wash., low at $397,630.
400 tons, sales and processing plant, Swift & Co., Somerville, Mass.

PLATES . . .

PLATES PLACED

1280 tons, two 181,736-bbl tanks, The Texas Co., Lawrenceville, Ill., to General American Transportation Corp., Chicago.
800 tons, up to 60-in. welded steel pipe, to Consolidated Western Steel Corp., Seattle; supplementary contract for General Electric Co., Hanford, Wash.
600 tons, 17 tanks, Erie Mining Co., Aurora, Minn., to Bethlehem Steel Co., Bethlehem, Pa.
600 tons, five storage silos, Erie Mining Co., Aurora, Minn., to Bethlehem Steel Co., Bethlehem, Pa.
160 tons, four propane tanks, New Departure Division, General Motors Corp., Bristol, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

PLATES PENDING

1000 tons, additional pressure tanks, etc., for pulp plant under construction at Cosmopolis, Wash.
1000 tons, additional tank contracts, stainless steel, Weyerhaeuser Lumber Co.'s chlorine plant, Longview, Wash.
500 tons, 5-million-gal water tank, Hood river, Oreg.; Pittsburgh-Des Moines Steel Co., Seattle, low at $118,776.
245 tons, hull plates, medium tensile, General Stores Supply Office, Navy, Philadelphia.
200 tons, 2-million-gal standpipe, District No. 68, Bellevue, Wash.; bids Nov. 2.
150 tons, bulk storage, air base tanks; bids to Corps of Engineers, Boston.
100 tons, one-million-gal steel standpipe; bids to King county, District No. 75, Washington Oct. 19. W. L. Richter, secretary.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Pennsylvania, 21 all-purpose diesel locomotives, 16 of 1600-hp and five of 2400-hp, to Alco Products Inc., New York.

LOCOMOTIVES PENDING

Erie Railroad, ten diesel-electric locomotives, including six 1600-hp general-purpose switchers, and four 1200-hp yard switchers.

RAILROAD CARS PENDING

Grand Trunk Western, 100 covered hopper cars; bids asked.

RAILS PLACED

Delaware, Lackawanna & Western, 8500 tons, with 6500 tons going to Bethlehem Steel Co., Bethlehem, Pa., and 2000 tons to U. S. Steel Corp., Pittsburgh.

RAILS PENDING

New York Central, 40,000 tons; bids asked.

Rubber Grows in New York!

In mid-town Manhattan's Rockefeller Center the new 19-story U.S. Rubber Company office building addition is rapidly nearing completion. Thousands of people daily gaze in wonderment at the progress of this new structure for which Ingalls fabricated the steel, again meeting the exacting schedules of today's construction.

U. S. RUBBER COMPANY
Building Addition
Rockefeller Center, Inc., Owner
George A. Fuller Company, Builder
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THE INGALLS IRON WORKS COMPANY
BIRMINGHAM, ALABAMA
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans
Plants: Birmingham, Ala., Verona, Pa., Pascagoula, Miss., North Birmingham, Ala., Decatur, Ala.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 164

Concrete reinforcing bar lettings are heavy in New England at firmer prices, with delivery lagging on old orders and more extended on new ones.

Shipments are one month to six weeks late, but delays in construction schedules are not entirely due to delinquent deliveries of reinforcing. Shortages of cement, structurals and piling also contribute to holdups.

Tool Steel . . .

Tool Steel Prices, Page 168

Shipments of high speed and tool steel (excluding hollow drill steel) in August totaled 8994 net tons, reports the American Iron & Steel Institute. This was an increase, compared with 7504 tons moved in the preceding month and was up sharply from the 6475 tons shipped in August a year ago.

Cumulative shipments in the first eight months this year were 73,624 net tons. In the like period of 1954, only 56,665 tons had been moved into consuming channels. In the corresponding period of 1953 the total was 81,744 tons.

Tubular Goods . . .

Tubular Goods Prices, Page 168

Gradual seasonal decline in pipe and tube sales are anticipated as the fourth quarter moves along. Oil country tubing shipments usually slump in midwinter. Slower mining activity in the Rocky Mountain area also is reflected in tubular goods demand during the winter months.

Standard pipe mills continue to operate at capacity. Distributors, however, are not ordering farther ahead than November. This undoubtedly mirrors an anticipated seasonal dip in construction. Merchant pipe sales usually lag from January through March.

Ferroalloy Prices

FERROALLOY quotations remain unchanged. The current price schedule was published in full on page 279 of the Oct. 10 issue of STEEL.

Wire . . .

Wire Prices, Pages 166 & 167

The merchant wire products trade is seasonally sluggish. But improvement in demand should come in November when distributors normally begin to replenish stocks in anticipation of spring requirements.

Manufacturers of nails and barbed wire report continued competition from abroad, especially along the southern seaboard. Nails in that area are being offered at $1.25 to $1.50 per keg under domestic manufacturers' costs, according to one eastern seller. Nails are coming in chiefly from Belgium; an increasing amount from Japan is noted.

Manufacturers wire is moving briskly, with delivery promises running 10 to 12 weeks. In the Baltimore area there is a particularly strong demand for bedding and furniture springs.

Steel Output Breaks Records

Record production of ingots and steel for castings in September and the first nine months of this year is reported by the American Iron & Steel Institute. September output totaled 9,881,000 net tons; the nine-month total was 85,782,793 tons.

Steelmaking furnaces in the nine months came within eight days of production in equaling the 88.3 million tons produced in all of last year. The record nine-month figure was about 272,000 tons above the previous record, set in 1953. During the comparable period last year, production totaled 64,233,619 tons.

In September the index of steel production was 143.5, compared with 134.9 in August and 98.9 in September, 1954. The index for the first nine months was 136.9.

Production in September was at a rate of 95.7 per cent of capacity; that for the first nine months was at 91.1 per cent.

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	OPEN HEARTH ‡Index	BESSEMER Net tons	BESSEMER Per cent of capacity	BESSEMER ‡Index	ELECTRIC Net tons	ELECTRIC Per cent of capacity	ELECTRIC ‡Index	TOTAL Net tons	TOTAL Per cent of capacity	TOTAL ‡Index	Calculated weekly production (Net tons)	Number of weeks in month
1955														
January	8,054,345	86.0	125.7	199,229	49.0	56.7	584,162	63.6	163.6	8,837,736	82.7	124.2	1,994,974	4.43
February	7,734,884	91.5	133.7	197,091	53.7	62.1	564,959	68.1	175.1	8,496,934	88.0	132.2	2,124,233	4.00
March	9,060,026	96.7	141.4	255,493	62.8	72.7	666,235	72.6	186.5	9,981,754	93.4	140.3	2,253,281	4.43
1st Quarter	24,849,255	91.4	133.6	651,813	55.2	63.9	1,815,356	68.1	175.1	27,316,424	88.0	132.3	2,124,139	12.86
April	8,858,549	97.7	142.9	275,069	69.8	80.9	681,477	76.6	197.2	9,815,095	94.8	142.6	2,287,901	4.29
May	9,307,291	99.4	145.3	305,347	75.1	86.9	715,678	77.9	200.4	10,328,316	96.6	145.2	2,331,448	4.43
June	*8,784,430	96.6	141.4	283,544	72.0	83.4	*698,493	78.6	202.1	9,746,467	94.1	141.6	2,271,904	4.29
2nd Quarter	*26,930,270	97.9	143.2	863,960	72.3	83.8	*2,095,648	77.7	199.9	29,889,878	95.2	143.1	2,297,454	13.01
1st 6 Months	*51,779,525	94.7	138.5	1,515,773	63.8	73.9	*3,911,004	72.9	187.5	57,206,302	91.6	137.7	2,211,299	25.87
July	8,232,535	88.1	128.5	268,348	66.1	76.4	600,063	65.5	168.0	9,100,946	85.3	127.9	2,059,038	4.42
*August	8,600,612	91.8	134.3	298,972	73.5	85.1	694,000	75.7	194.6	9,594,545	89.7	134.9	2,165,812	4.43
†September	8,828,000	97.6	142.4	307,000	78.1	90.3	746,000	84.1	215.8	9,881,000	95.7	143.5	2,309,000	4.28
3rd Quarter	25,661,147	92.4	135.0	874,320	72.5	83.8	2,041,024	75.0	192.6	28,576,491	90.2	135.4	2,176,427	13.13
9 Months	77,440,672	93.9	137.3	2,390,093	66.8	77.2	5,952,028	73.6	189.2	85,782,793	91.1	136.9	2,199,559	39.00
1954														
January	7,256,526	78.3	113.3	260,453	64.0	74.1	434,507	48.9	121.7	7,951,486	75.3	111.8	1,794,918	4.43
February	6,523,213	77.9	112.8	174,253	47.4	54.9	385,771	48.1	119.6	7,083,237	74.3	110.2	1,770,809	4.00
March	6,649,667	71.7	103.8	207,726	51.1	59.1	432,207	48.7	121.0	7,289,600	69.0	102.5	1,645,508	4.43
1st Quarter	20,429,406	75.9	109.9	642,432	54.4	63.0	1,252,485	48.6	120.8	22,324,323	72.8	108.1	1,735,950	12.86
April	6,365,326	70.9	102.7	162,657	41.3	47.8	442,954	51.5	128.2	6,970,937	68.1	101.3	1,624,927	4.29
May	6,817,951	73.6	106.4	198,063	48.7	56.4	456,724	51.4	127.9	7,472,738	70.7	105.0	1,686,848	4.43
June	6,702,006	74.7	108.1	207,666	52.7	61.1	453,962	52.8	131.3	7,363,634	72.0	107.0	1,716,465	4.29
2nd Quarter	19,885,283	73.1	105.8	568,386	47.6	55.1	1,353,640	51.9	129.1	21,807,309	70.3	104.4	1,676,196	13.01
1st Half	40,314,689	74.5	107.8	1,210,818	51.0	59.0	2,606,125	50.3	125.0	44,131,632	71.5	106.2	1,705,900	25.87
July	6,040,120	65.3	94.3	205,313	50.6	58.4	382,164	43.1	107.0	6,627,597	62.9	93.2	1,499,458	4.42
August	6,021,496	65.0	94.0	217,837	53.6	62.0	427,574	48.2	119.7	6,666,907	63.1	93.7	1,504,945	4.43
September	6,140,266	68.6	99.1	214,065	54.5	63.0	453,152	52.8	131.1	6,807,483	66.7	98.9	1,590,533	4.28
3rd Quarter	18,201,882	66.3	95.8	637,215	52.9	61.1	1,262,890	48.0	119.1	20,101,987	64.2	95.2	1,530,997	13.13
9 Months	58,516,571	71.7	103.7	1,848,033	51.6	59.7	3,869,015	49.5	123.0	64,233,619	69.1	102.5	1,647,016	39.00
October	6,973,568	75.2	108.9	237,754	58.5	67.7	490,211	55.2	137.3	7,701,533	72.9	108.3	1,738,495	4.43
November	7,307,151	81.4	117.9	231,191	58.7	68.0	551,085	64.1	159.4	8,089,427	79.1	117.5	1,885,647	4.29
December	7,530,204	81.4	117.6	231,126	57.0	65.8	525,743	59.4	147.2	8,287,073	78.6	116.5	1,874,903	4.42
4th Quarter	21,810,923	79.3	114.7	700,071	58.0	67.1	1,567,039	59.5	147.8	24,078,033	76.8	114.0	1,832,423	13.14
2nd Half	40,012,805	72.8	105.2	1,337,286	55.4	64.1	2,829,929	53.8	133.5	44,180,020	70.5	104.6	1,681,767	26.27
Total	80,327,494	73.6	106.5	2,548,104	53.2	61.6	5,436,054	52.0	129.3	88,311,652	71.0	105.4	1,693,741	52.14

Note—The percentages of capacity operated are calculated on weekly capacities in 1955 of 2,114,196 net tons open hearth, 91,810 net tons bessemer and 207,272 net tons electric ingots and steel for castings, total 2,413,278 net tons; based on annual capacities as of Jan. 1, 1955, as follows: Open hearth 110,234,160 net tons, bessemer 4,787,000 net tons, electric 10,807,150 net tons, total 125,828,310 net tons.

Note—The percentages of capacity operated are calculated on weekly capacities in 1954 of 2,092,342 net tons open hearth, 91,810 net tons bessemer and 200,397 net tons electric ingots and steel for castings, total 2,384,549 net tons; based on annual capacities as of Jan. 1, 1954, as follows: Open hearth 109,094,730 net tons, bessemer 4,787,000 net tons, electric 10,448,680 net tons, total 124,330,410 net tons.

*Revised. †Preliminary figures, subject to revision. ‡Index of production based on average weekly production of the three years 1947-1948-1949.

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Freeway's PATENTED dies, which blank, form and trim small metal stampings in ONE operation . . . cut press costs almost in half on these parts, to insure our customer a substantial saving. Other precision stampings reflect the same economical handling . . . at Freeway. Let us prove these savings . . . with a quotation.

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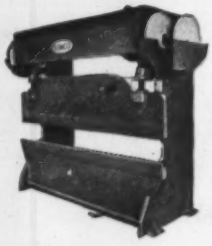

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ESTABLISHED 1919

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Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hematite (spot)...nom.	18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	$34.50-$35.00
Domestic, scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 95c-$1.05 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $45.00-$50.00
48% 3:1	42.00-44.00
48% no ratio	34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	32.00

Domestic

Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

55-60%	$3.60-$3.85
60-65%	3.85-4.00

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $122; Salina, Pa., $127; Niles, O., $133.

Super-Duty: St. Louis, $150.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., Hawston, Pa., $128; Warren, Niles, O., Hays, Pa., $133; Morrisville, Pa., $131.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $138; Lehigh, Utah, $144; Los Angeles, $151.

Super Duty: Hays, Sproul, Hawston, Pa., Warren, Windham, O., Athens, Tex., $145; Morrisville, Pa., Niles, O., $148; Joliet, Ill., $151; Curtner, Calif., $163.

Semisilica Brick (per 1000)

Clearfield, Pa., $139; Philadelphia, $124; Woodbridge, N. J., $122.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $88.50; Wellsville, O., $92.50; Clearfield, Pa., Portsmouth, O., $98.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $194; Danville, Ill., $197; Philadelphia, $201.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $241; Danville, Ill., $244; Philadelphia, $248.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $279; Danville, Ill., $281; Clearfield, Pa., Philadelphia, $286.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $157; Clearfield, Pa., $158.50; St. Louis, $169.30.

Nozzles (per 1000)

Reesdale, Pa., $253.70; Johnstown, Pa., $259.20; Clearfield, Pa., $259.40; St. Louis, $259.45; Bridgeburg, Pa., $286.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $196; Clearfield, Pa., $198; St. Louis, $195.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Nario, O., $15; Thornton, McCook, Ill., $15.60; Dolly Siding, Bonne Terre, Mo., $14.

Magnesite (per net ton)

Domestic, dead-burned, bulk, ¼-in. grains with fines: Chewelah, Wash., $40; Luning, Nev., $40. ⅜-in. grains with fines: Baltimore, $66.40.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.25-$14.00
Connellsville, foundry	16.00-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$25.50
Camden, N. J., ovens	25.00
Everett, Mass., ovens	
New England, deld.	*27.05
Chicago, ovens	25.75
Chicago, deld.	27.25
Terre Haute, Ind., ovens	25.50
Milwaukee, ovens	26.25
Indianapolis, ovens	25.50
Portsmouth, O., ovens	24.75
Cincinnati, deld.	27.34
Painesville, O., ovens	26.25
Cleveland, deld.	28.18
Erie, Pa., ovens	25.00
Birmingham, ovens	*24.40*
Cincinnati, deld.	*29.33*
Buffalo, ovens	25.75
Buffalo, deld.	27.00
Lone Star, Tex., ovens	19.50
Neville Island, Pa., ovens	25.00
Philadelphia, ovens	25.00
Swedeland, Pa., ovens	25.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	25.00
Detroit, ovens	26.25
Detroit, deld.	27.25
Pontiac, deld.	27.81
Saginaw, deld.	29.33

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Ammonium sulphate	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol: Grade 1, 14.00; Grade 2-3, 13.50; Grade 4, 15.50; Grade 5, 14.25.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-$39; 70%, $35-$36; 60%, $31-$32. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $34; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length (Inches)	Per 100 lb
2	24	$52.50
2½	30	33.75
3	40	32.00
4	40	30.25
5¼	40	30.00
6	60	27.25
7	60	26.75
8, 9, 10	60	24.25
12	72	27.25
14	60	23.50
16	72	22.50
17	60	23.00
18	72	22.50
20	72	22.25

CARBON

8	60	12.10
10	60	11.80
12	60	11.75
14	60	11.70
14	72	10.85
17	60	10.75
17	72	10.35
20	84	10.30
20	90	10.10
24	72, 84	10.30
24	96	10.05
30	84	10.20
40, 35	110	9.90
40	100	9.90

DON'T LOOK NOW

. . . but one of Milford's 5 plants or 20 offices is right nearby — ready to give you prompt service and swift deliveries on all your tubular rivet needs.

THE MILFORD RIVET & MACHINE CO.

Plants: Milford, Conn.; Norwalk, Calif.; Elyria, Ohio; Aurora, Ill.; Hatboro, Pa.

Offices: Atlanta, Chicago, Cleveland, Detroit, Fort Worth, Indianapolis, Newark, New York, Pittsburgh, Racine, St. Louis, St. Paul, San Francisco, Seattle; Norwalk, Calif.; Stratford, Conn.; Charlotte, N. C.; Seneca Falls, N.Y.; Jenkintown, Pa.; Westwood, Mass.

Headquarters for RIVETS
(Tubular split and special cold formed)
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Every state in the Union boasts one hotel that's head and shoulders above all others. In Maryland, it's Baltimore's Lord Baltimore Hotel.

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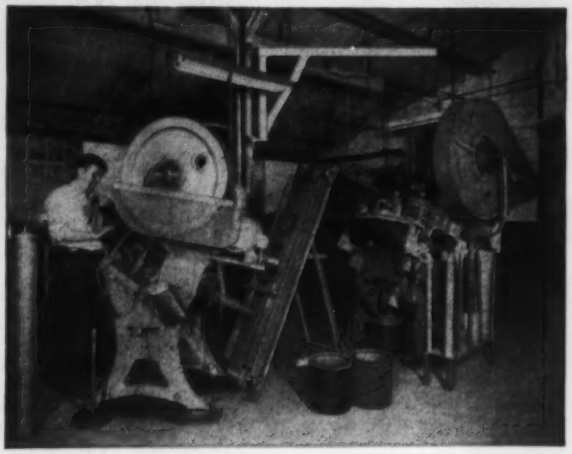
STOP WASTING PREMIUM FLOOR SPACE

INCREASE PLANT PRODUCTION . . . ELEVATE AND CONVEY—MAGNETICALLY!

HOMER "SPACE-SAVER" MAGNETIC CONVEYORS the modern method of handling ferrous parts

Here's how many valuable hours of time are saved in the manufacture of Lima Electric Motors, by The Lima Electric Motor Company. Photo at right shows how Lima uses the Homer "Space-Saver" Magnetic Elevator-Conveyor between presses, in stamping rotor and stator laminations. The Homer "Space-Saver" makes possible tandem operation of two presses—with one operator and permits close grouping of machines. Another "Space-Saver" receives stampings from tandem press and automatically stacks finished laminations without manual assistance.



- **PORTABILITY** Can be installed as a portable or stationary unit— easily moved from one location to another.
- **ADAPTABILITY** Built in standard or custom units. Can be used in new or existing production lines.
- **FLEXIBILITY** Magnetically elevates and conveys nuts, bolts, nails, washers, tin cans, bottle caps, ferrous stampings, etc.

If you have a ferrous material elevating or conveying problem, we suggest you write us today for complete information on HOMER "Space-Saver" Magnetic Elevator-Conveyors.

THE HOMER MANUFACTURING CO. INC.
DEPT. 149 LIMA, OHIO

HOMER . . . *the FINEST in Permanent Magnetic Equipment for Industry*

PERFORATED METALS
TO YOUR REQUIREMENTS
FOR
ALL INDUSTRIAL USES
ARCHITECTURAL GRILLES
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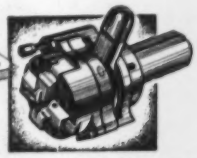
DIAMOND MFG. CO.
BOX 32 WYOMING, PA.

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: *A. C. Berbringer, Inc., 334 N. San Pedro St., Los Angeles, California.* Canada: *F. P. Barber Machinery Co., Toronto, Canada.*

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for Corrugating and Complete Line of Culvert Equipment—Slitting and Coiling Equipment for Ferrous and Non-Ferrous Material in All Capacities—Warehouse and Steel Mill Cut to Length Lines for Shearing and Levelling Sheets from Coils—Shears for Shearing Sheets and Plates Both Underdriven and Overdriven Types in Capacities to 1¼" Plate.

STAMCO, Inc., New Bremen, Ohio

IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

Scrap . . .

Scrap Prices, Page 182

Philadelphia—Scrap prices continue strong. Electric furnace bundles are higher at $48.50, delivered, and machine shop turnings and mixed borings and turnings are quoted at $28.50-$29.50. Heavy turnings have been advanced to $43, delivered, and rail crops to $58-$59.

Prices on major open-hearth grades of scrap are unchanged.

Pittsburgh—The general upward trend in borings and turnings, cast iron scrap and No. 1 railroad heavy melting scrap continues. Quotations on those grades edged upwards an average of $1 a ton, reflecting heavy fourth quarter industrial demand.

In other grades, the situation is static. While brokers say demand is light in view of production rates, steel corporation purchasing agents report they have comfortable inventories and are adding to them in preparation for winter.

Cleveland—Railroad lists brought substantially higher prices last week resulting in a markup of about $2 a ton on most items in that category. Otherwise, the scrap market is quiet, with prices on both steelmaking and foundry grades of dealer material unchanged in the absence of representative sales.

Buffalo — Market sentiment continues strong with new business reported in both steelmaking and cast grades of scrap at recently established prices. Stocks are ample for dealers to meet sales commitments. Boat receipts are light.

Cincinnati—Limited purchases by the local mill boosted prices here last week. Steelmaking grades advanced $1.50 to $2 a ton. Rails went up $3 to $4 under strong demand from the foundries. Turnings and borings moved up $1.

New York—Scrap business is brisk here, with prices strong but unchanged. Particular strength is noted in the cast market. District consumers of cast and those outside the local area are buying more actively, especially No. 1 cupola.

Chicago — Steelmaking operations in this district hit 98 per cent of capacity last week, the highest since the first week in June. Buying of scrap by the mills is on the conservative side to reduce pressure on the market.

Detroit—The scrap market here is firm with prices unchanged. Ingot operations in the district last week were estimated at 94 per cent of capacity.

St. Louis—Scrap has moved up sharply, spurred by a $2 rise in the bid price of premium grades by the district's two leading consumers, Laclede and Granite City Steel companies. Shipments under old prices have failed to bring in tonnage sufficient for daily melt because scrap producers nearby have been shipping to other districts for freight or price reasons. With the $2 boost in melting steel and bundles, cast grade buyers moved in to replenish foundry inventories. Rails went up 50 cents to $4 as buyers sought to stem their recent heavy movement to Chicago.

Birmingham—No. 2 bundles continue to overhang the scrap market in large quantities. Dealers are stretching buy orders of all steel grades to include bundles in an effort to dispose of the surplus. An Atlanta mill has raised its local price for No. 2 steel to $38, up $2 over its last offer, with the $5 premium for material shipped from a distance still prevailing. Exports continue active.

Los Angeles—The scrap market is slightly less active than it was last quarter. Many large consumers have curtailed their purchases somewhat.

San Francisco—The mills have lifted their buying prices on top grades of steel scrap $3 a ton.

Pig Iron . . .

Pig Iron Prices, Page 189

Foundries are operating at a good clip, and this is providing active demand for pig iron. Most gray iron shops are operating at 80 per cent of capacity, some even higher.

Prospects are that iron shipments in the fourth quarter will be heavy.

Keokuk Electro-Metals Co., Keokuk, Iowa, announced an increase of $2.50 per gross ton on all grades of electric furnace silvery pig iron effective Oct. 6.

New Jersey Zinc Co. advanced the price of spiegeleisen $2 a ton, effective Oct. 12. Under the new schedule, 21-23 per cent material is quoted $90.50, Palmerton, Pa., per gross ton in carlots, 19-21 per cent material. $88, and 16-19 per cent, $86.

Warehouse . . .

Warehouse Prices, Page 189

Large warehouses closely affiliated with major steel proudcers have joined small distributors in complaining about the difficulty of maintaining balanced stocks. Practically all products, excepting tin plate and wire, are in short supply. It's im-

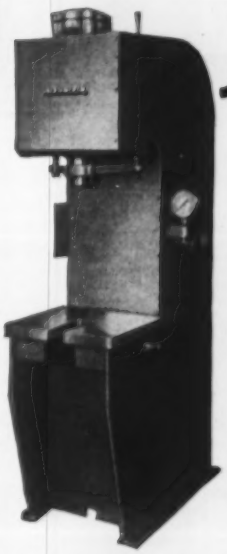
(*Please turn to page* 184)

PRICE LIST

ON HANNIFIN STOCK HYDRAULIC PRESSES

1-TON	$ 552
2-TON	$ 627
5-TON	$1,286
8-TON	$1,581
10-TON	$1,855
25-TON	$3,681

Prices complete with motors and starters F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.



DELIVERY FROM STOCK

Demand for these popular presses is so consistent we are able to produce them in quantity and pass the savings along to you.

Construction-wise and quality-wise these small general-purpose presses are identical to the larger Hannifin presses, up to 150 tons. Special, optional controls when needed.

WRITE for complete information on the Hannifin Hydraulic Press you're interested in.

HANNIFIN

HANNIFIN CORPORATION, 523 S. WOLF ROAD, DES PLAINES, ILLINOIS

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Oct. 12	$45.33
Oct. 5	45.33
Sept. Avg.	44.42
Oct. 1954	32.25
Oct. 1950	41.37

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting..	44.00-45.00
No. 2 heavy melting..	40.00-41.00
No. 1 bundles	44.00-45.00
No. 2 bundles	37.00-38.00
No. 1 busheling	44.00-45.00
Machine shop turnings	*30.00-31.00*
Mixed borings, turnings	*30.00-31.00*
Short shovel turnings	*33.00-34.00*
Cast iron borings	*33.00-34.00*
Cut structurals, 3 ft lengths	49.00-50.00
Heavy turnings	42.00-43.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	48.00-49.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	*39.00-40.00*
Heavy breakable cast	*39.00-40.00*
Unstripped motor blocks	29.00-30.00
No. 1 machinery cast	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*48.00-49.00*
Rails, 2 ft and under	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	51.00-52.00
Railroad specialties	53.00-54.00

Stainless Steel Scrap

18-8 bundles & solids	270.00-285.00
18-8 turnings	130.00-140.00
430 bundles & solids	100.00-110.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer's plant)

No. 1 heavy melting..	44.00-45.00
No. 2 heavy melting..	32.00-33.00
No. 1 bundles	44.00-45.00
No. 2 bundles	29.00-30.00
No. 1 busheling	44.00-45.00
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.50-28.50
Short shovel turnings..	27.50-28.50
Cast iron borings	27.50-28.50
Low phos.	45.00-46.00
Cut structural plates 2 ft and under	49.00-50.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	44.00-45.00

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	40.00-41.00
Stove plate	46.00-47.00
Heavy breakable cast..	37.00-38.00
Unstripped motor blocks	29.00-30.00
Brake shoes	35.00-36.00
Clean auto cast	48.00-49.00
Burnt cast	37.00-38.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	*53.00-54.00*
Rails, 2 ft and under	*62.00-63.00*
Rails, 18 in. and under	*63.00-64.00*
Rails, random lengths	*58.00-59.00*
Cast steel	*48.00-49.00*
Railroad specialties	*54.00-55.00*
Uncut tires	*49.00-50.00*
Angles, splice bars	*54.50-55.50*
Rails, rerolling	*63.00-64.00*

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	290.00-300.00
18-8 turnings	130.00-140.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting...	47.50-48.50
No. 2 heavy melting...	35.00-36.00
No. 1 bundles	47.50-48.50
No. 2 bundles	32.00-33.00
No. 1 busheling	47.50-48.50
Machine shop turnings.	24.00-25.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	47.50-48.50
Electric furnace bundles	47.50-48.50

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00

CHICAGO

No. 1 heavy melting ..	44.00-46.00
No. 2 heavy melting ..	36.00-37.00
No. 1 factory bundles.	46.00-47.00
No. 1 dealer bundles..	43.00-44.00
No. 2 bundles	33.00-34.00
No. 1 busheling	44.00-46.00
Machine shop turnings.	29.00-30.00
Mixed borings, turnings.	*31.00-32.00*
Short shovel turnings.	31.00-32.00
Cast iron borings	31.00-32.00
Cut structurals, 3 ft	*49.00-50.00*
Punchings & plate scrap.	*50.00-51.00*

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	37.00-38.00
Unstripped motor blocks	34.00-35.00
Clean auto cast	53.00-54.00
Drop broken machinery	53.00-54.00

Railroad Scrap

No. 1 R.R. heavy melt.	*48.00-49.00*
R.R. malleable	*56.00-57.00*
Rails, 2 ft and under	*60.00-61.00*
Rails, 18 in. and under	*61.00-62.00*
Angles, splice bars	*57.00-58.00*
Rails, rerolling	65.00-66.00

Stainless Steel Scrap

18-8 bundles & solids	290.00-300.00
18-8 turnings	160.00-170.00
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	40.00
No. 2 heavy melting..	30.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	22.50
Mixed borings, turnings	22.50
Short shovel turnings.	25.50
Punchings & plate scrap	46.50

Cast Iron Grades

Charging box cast	32.00
No. 1 cupola	39.00
Stove plate	32.00
Heavy breakable	32.00
Unstripped motor blocks	22.00
Clean auto cast	44.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting...	36.00-37.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	28.00-29.00
No. 1 busheling	36.00-37.00
Cast iron borings	17.00-18.00
Short shovel turnings..	26.00-27.00
Machine shop turnings.	25.00-26.00
Electric furnace bundles	38.00-39.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	47.50-48.00
Stove plate	44.50-45.50
Bar crops and plate	43.00-44.00
Structural plate, 2 ft..	42.00-43.00
Unstripped motor blocks	36.00-37.00
Charging box cast	*30.00-31.00*
No. 1 wheels	38.00-39.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18-in. and under.	*58.00-59.00*
Rails, rerolling	*57.00-58.00*
Rails, random lengths	*52.00-53.00*
Angles, splice bars	*53.00-54.00*

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting...	46.00-47.00
No. 2 heavy melting...	40.00-41.00
No. 1 bundles	46.00-47.00
No. 2 bundles	37.00-39.00
No. 1 busheling	46.00-47.00
Electric furnace bundles	*48.50*
Machine shop turnings	*28.50-29.50*
Mixed borings, turnings	*28.50-29.50*
Short shovel turnings..	30.50-31.00
Structurals & plate	49.00-50.00
Heavy turnings	*43.00*
Couplers, springs, wheels	51.00
Rail crops, 2 ft & under	*58.00-59.00*

Cast Iron Grades

No. 1 cupola	40.00-42.00
Malleable	58.00
Heavy breakable cast..	45.00-46.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting..	41.00-42.00
No. 2 heavy melting..	37.00-38.00
No. 1 bundles	40.50-41.50
No. 2 bundles	32.00-33.00
Machine shop turnings.	20.00-21.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings.	22.00-23.00
Low phos. (structural & plate)	42.00-43.00

Cast Iron Grades

No. 1 cupola	36.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	38.00-39.00

Stainless Steel

18-8 borings, turnings..	150.00-160.00
430 sheets, clips, solids	115.00-120.00
410 sheets, clips, solids	100.00-105.00
18-8 sheets, clips, solids	280.00-285.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting..	36.50-37.50
No. 2 heavy melting..	31.00-31.50
No. 1 bundles	36.50-37.50
No. 2 bundles	27.00-27.50
Machine shop turnings.	18.50-19.00
Mixed borings, turnings	22.50-23.00
Short shovel turnings..	23.50-24.00
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast..	35.00-36.00

BUFFALO

No. 1 heavy melting...	38.00-39.00
No. 2 heavy melting..	35.00-36.00
No. 1 bundles	38.00-39.00
No. 2 bundles	32.00-33.00
No. 1 busheling	38.00-39.00
Mixed borings, turnings	28.00-29.00
Machine shop turnings.	26.00-27.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	45.00-46.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths.	47.00-48.00
Rails, 2 ft and under.	51.00-52.00
Railroad specialties	48.00-49.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*41.50-42.50*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*41.50-42.50*
No. 2 bundles	*33.00-34.00*
No. 1 busheling	*41.50-42.50*
Machine shop turnings	*27.00-28.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*24.00-25.00*
Low phos., 18 in.	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	*41.00-42.00*
Charging box cast	*41.00-42.00*
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under	*60.00-61.00*
Rails, random lengths	*53.00-54.00*

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*38.50*
No. 2 heavy melting	*36.00*
No. 1 bundles	*39.50*
No. 2 bundles	*31.50*
Machine shop turnings..	27.00
Short shovel turnings..	27.00

Cast Iron Grades

No. 1 cupola	46.50
Charging box cast	39.00
Heavy breakable cast	*37.00*
Unstripped motor blocks	37.00
Brake shoes	36.00
Clean auto cast	*47.00*
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00*
Rails, 18 in. and under	*59.00*
Rails, random lengths..	55.00
Rails, rerolling	64.00
Angles, splice bars	*55.00*

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting..	39.50
No. 2 heavy melting..	35.50
No. 1 bundles	35.50
No. 2 bundles	30.50
No. 3 bundles	19.00
Machine shop turnings.	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings..	15.00-16.00
Electric furnace, No. 1	*50.00*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*43.00*
Heavy breakable cast	*38.00*
No. 1 wheels	35.00
Unstripped motor blocks	29.00
Clean motor blocks	40.00
Stove plate (f.o.b. plant)	*30.00*
Brake shoes	*35.00*

Railroad Scrap (Delivered consumer's plant)

Rails, random lenghs..	33.00

LOS ANGELES

No. 1 heavy melting..	32.00
No. 2 heavy melting..	30.00
No. 1 bundles	32.00
No. 2 bundles	27.00
Machine shop turnings.	10.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	43.00-45.00

SAN FRANCISCO

No. 1 heavy melting	*37.00*
No. 2 heavy melting	*35.00*
No. 1 bundles	*37.00*
No. 2 bundles	*32.00*
No. 1 busheling	*37.00*
Machine shop turnings.	14.00
Mixed borings, turnings	14.00
Short shovel turnings	*17.00*
Cast iron borings	*17.00*
Cut structurals	*39.00*
Heavy turnings	*17.00*
Punchings & plate scrap	*37.00*

Cast Iron Grades

No. 1 cupola	*45.00*
Charging box cast	35.00
Stove plate	*39.00*
Heavy breakable cast.	36.00
Unstripped motor blocks	*32.00*
Brake shoes	35.00
Clean auto cast	*45.00*
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

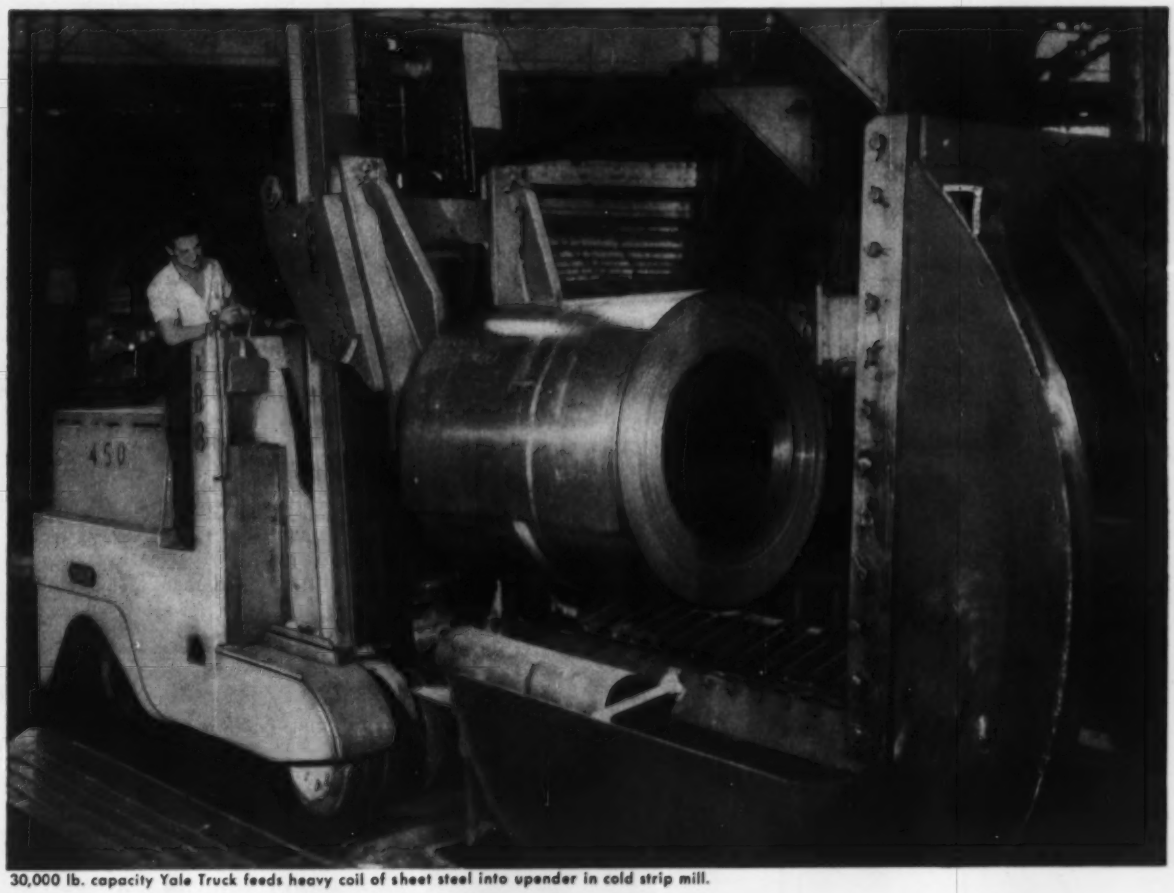
(Delivered prices)

No. 1 heavy melting..	38.50
No. 2 heavy melting..	35.50
No. 1 bundles	38.50
No. 2 bundles	32.50
Mixed steel scrap	32.50
Mixed borings, turnings	17.00
Rails, remelting	47.50
Busheling, new factory: Prepared	36.50
Unprepared	32.50
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast..	42.00-45.00

†F.o.b., shipping point.



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Yale Giant Electric Ram Lifts, carries 15-ton steel coil

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In receiving areas, scrap and plant yards, foundries, production lines, warehouses and loading docks, versatile YALE Trucks lift, move, stack all types of materials with sure, smooth power—in many instances cutting handling costs as much as 75%.

To modernize and integrate your materials handling program, you can pick exactly the equipment you need from YALE's electric, gas and diesel trucks—the most complete line available. Electric Truck capacities range from 1,000 to 100,000 lbs.; Gas Trucks, 1,000 to 10,000 lbs.—with job-specified attachments available for materials of any size or weight. For more details, call a YALE representative today or mail coupon today.

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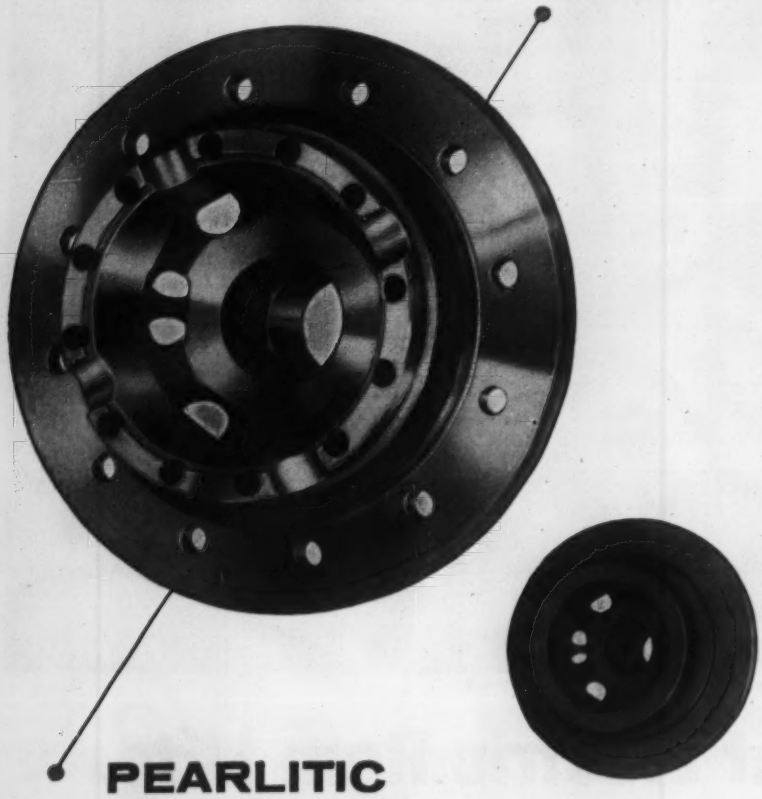
In Canada write: The Yale & Towne Manufacturing Co.
St. Catharines, Ontario, Canada

MACHINABILITY INDEX 80-90*



PEARLITIC MALLEABLE CASTINGS

*B1112 STEEL = 100

Low machinability index of 80-90 (B1112 steel = 100) is probably reason enough to warrant serious consideration for your product.

But pearlitic malleable castings—from National—don't stop there. They have great ultimate strength . . . resist wear under heavy loads at high speeds . . . make excellent non-seizing bearings . . . can be air or liquid-quenched . . . can be smooth-finished.

Don't overlook the advantages of pearlitic malleable. For pearlitic malleable castings—from National—can often reduce manufacturing costs, weight and assembly time . . . can increase the sales potential of your product.

AA-1806

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland 6, Ohio

The Nation's largest independent producer of malleable and pearlitic malleable

(*Concluded from page* 181)

possible to place orders for fourth quarter delivery, except in some pipe sizes.

One leading distributor in the Philadelphia district, in commenting upon the difficulty in obtaining steel, believes it will be at least six months before he can count on an increase in shipments from the mills—at least as major products are concerned. He regards the outlook in plates and shapes as particularly stringent, with prospects in bars and sheets not much more encouraging.

Customers are becoming less exacting in their specifications. In most instances, regular mill customers are getting what they can from mills and supplementing with material from distributors.

Distributors doubt that October's business (on a daily average basis) will be ahead of September's, because of difficulty in maintaining stocks

Rails, Cars . . .

Track Material Prices, Page 167

Rail demand for 1956 is beginning to perk up. Some of the major eastern roads, which bought a relatively negligible amount of tonnage for this year, are in the market. The New York Central is asking for 40,000 tons. While this is substantially less than it normally requires, it is well above its purchases for 1955. In the south, the Virginian has been a recent buyer.

New car demand has slumped, but there is increasing pressure for steel against recent car orders. A commercial car builder (Pullman-Standard Car Mfg. Co.) is planning new car building facilities, something not heard of in some time. Pullman contemplates an expansion program at its Bessemer, Ala., plant involving facilities for the welding of cars.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 167

Manufacturers of bolts and nuts are establishing new list prices on bolts, with accompanying changes in discounts. This is the first change in bolt list prices in years, although there have been several changes in published discounts, the last this past summer to reflect increases in steel and labor costs. List prices on nuts were revised in 1953.

In general, the new list prices are down on the smaller bolts and up on the larger sizes. With regard to the average markdown in the smaller bolts, it is explained there have been manufacturing economies of late which can be passed along to consumers. As to the larger bolts, economies are not so prevalent.

90-Pound Tie Plates

350 Tons Strictly No. 1 Relay Tie Plates

Also new and relay rail, new track spikes, bolts and track turnouts for prompt shipment.

Write or wire for prices.

SONKEN-GALAMBA CORPORATION
2nd and Riverview (X-252)
Kansas City 18, Kansas
ATwater 9305

WEST COAST DISTRICT MANAGER

Wanted by Detroit manufacturer of a well-known component with automotive, aircraft, and industrial applications. Must be a Sales Engineer, able to talk the language of design engineers, to discuss applications and work with distributors. Company provides training and competent backing by application engineering department. Salary, expenses and bonus. Headquarters in vicinity of Los Angeles or San Francisco. Replies confidential.

Send qualifications to
Box 319, STEEL
Penton Building Cleveland 13, Ohio

TREMENDOUS VALUE— ALMOST NEW CORE OVEN— PRICED AT LESS THAN HALF REPLACEMENT COST

"Despatch Tower" (75 ft. high) Core Oven, Serial #21548. *Complete*, Dismantled, with the following specifications:

Maximum temperature ..... 500° F.
Average baking time ..... 4 hours
Output .. Approximately 5 racks per hour
Rack dimensions .. 36" x 102" x 26" high, overall
Total number of racks .. 27 (20 racks in the oven at one time)
Rack capacity ..... 400 lbs.
Heater .. "Despatch" direct gas, 1,500,000 BTU per hour (Heater is externally mounted)
Combustion equipment .. "Eclipse" atmospheric type
Electric current specs:
Motors .. 440/220 v. 3 phase 60 cycle
Controls .. 110 v. 1 phase 60 cycle A.C.
Fuel .. Natural gas 6"—8" W.C.

THIS OVEN IS LIKE NEW— IN USE ONLY THREE YEARS.

A complete set of drawings, including one assembly drawing and twenty-eight related drawings, is available upon request.

PRICE—A BARGAIN AT $20,000.00

For further information, please contact Mr. Don Kelker, Purchasing Agent or Mr. Don Smith, Plant Engineer.

THE DURIRON COMPANY, INC.
Dayton, Ohio

FOR SALE--

R.R. EQUIPMENT
Immediate Delivery
• REPAIRED
• REBUILT
• or "AS IS"

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50 and 70 ton Capacities
Tank Car Storage Tanks
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RAIL & INDUSTRIAL EQUIPMENT CO., Inc.

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RR Yard & Shops, LANDISVILLE, PA

CLASSIFIED

Help Wanted

ELECTRICAL ENGINEER EXPERIENCED IN INDUCTION HEATING. Must be capable of designing induction heating and control components. Established concern. Salary open. Reply Box 312, STEEL, Penton Bldg., Cleveland 13, Ohio.

Employment Service

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 45 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bldg., Buffalo 3, N.Y.

LARGE MACHINE AND WELDMENT CAPACITY

Open capacity on 24 ft. and 10 ft. Vertical Boring Mills 7", 5" and 4" Horizontal Boring Mills; large radials and supporting small machines including new 2 AC Warner & Swasey automatic chucking. Especially interested in producing weldments requiring machining.

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Phone: Henry Kingston—Sagamore 2-6500

10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

SALE OR RENT

ECA SPECIALS

1—AMERICAN GUY DERRICK, Model 4-110, 50-ton cap., steel erectors. 120' mast, 110' boom. New in fall of 1951. Like new cond.

2—AMERICAN GUY DERRICKS, Model 2-100, 20-ton cap., steel erectors. 110' mast, 100' boom. Like new.

1—WILEY STIFFLEG DERRICK, Model E, 25-ton, 60' boom, bullwheel. Rated 25-ton—38' radius. Perfect cond.

1—D/D SKAGIT, Model BU-140 YD., 4-speed. Single line pull ranging from 25,000 # @ 123 FPM to 222,000 # @ 14 FPM.

Also complete line of gas, electric and steam, late models, 2 and 3/drum hoists for use with the above derricks.

1—UNIT WAGON CRANE, Model 1020, self-propelled, cap., 10 to 15-ton, 40' boom. Mounted on 12 pneumatic tired carrier, hydraulic steering, air brakes. Completely rebuilt.

1—OHIO LOCOMOTIVE CRANE, Model F, steam, oil-burning. National Board boiler. Excellent condition.

Please Contact Nearest ECA Office.

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CHICAGO 4, ILL., 327A-So. LaSalle St.

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ALL CLASSIFICATIONS
Other than "Positions Wanted"

	Set Solid	All Capitals	All Caps Leaded
50 words or less	$15.00	$19.20	$23.40
Each additional word	.30	.38	.47

POSITIONS WANTED

25 words or less	$ 3.60	$ 4.50	$ 5.40
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Cash with order necessary on "Positions Wanted"

Keyed address takes seven words. Replies forwarded without charge.

All classified pages are 3 columns, each column 2¼".

Forms close 10 days prior to publication date.

STEEL *The Weekly Magazine of Metalworking*
Penton Building, Cleveland 13, Ohio

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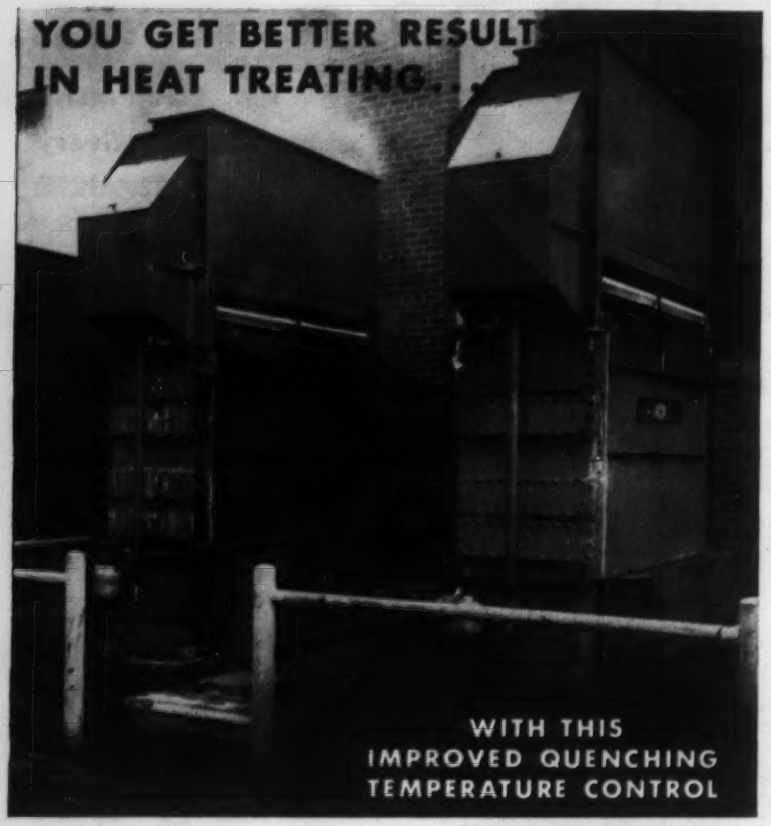
Young men with ability and ambition are needed for trainee and staff positions. Good pay and benefits plus ample opportunity for advancement make possible individual growth and development with expanding organization.

Send full information on training and experience to:

WHEELABRATOR CORPORATION
(Formerly American Wheelabrator & Equipment Corp.)
Mishawaka, Indiana



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● Use the **NIAGARA AERO HEAT EXCHANGER** to control the temperature of your quench bath and you remove the heat at its rate of input, always quenching at the exact temperature that will give your product the best physical properties. You get uniform results throughout the day's production, prevent losses, avoid rejections, increase your heat treating capacity.

The Niagara Aero Heat Exchanger transfers the heat to atmospheric air by evaporative cooling. It extends your quenching capacity without using extra water. It pays for itself with water savings.

In the installation illustrated the quench is caustic soda. Water also is accurately cooled and the system is easily kept clean. With an oil quench an extra advantage is to prevent flash fires.

You can cool and hold accurately the temperature of all fluids, air, gases, water, oils, solutions, chemicals for processes and coolants for mechanical and electrical equipment. With the Niagara Aero Heat Exchanger you have closed system cooling, free from dirt and scale.

For further information write for Bulletin No. 120

NIAGARA BLOWER COMPANY

Dept. S, 405 Lexington Ave. New York 17, N. Y.

District Engineers in Principal Cities of United States and Canada

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For hand-in-glove mileage

be sure to order Jomacs

Flexibility and hard wear are qualities that make Jomac® Work Gloves your best buy in hand protection. Describe your plant operations, temperature conditions, etc., and we'll gladly recommend an economical Jomac for the job, and send you a free sample pair. Jomac Inc., Dept. E, Philadelphia 38, Pa.

JOMAC 644—SAFETY CUFF GLOVES, made of extra-heavy Jomac cloth, give maximum protection to workers' hands. They outwear leather gloves, retain flexibility, can be cleaned and reconditioned many times. Reversible—fit either hand, any two make a pair.

It pays to keep Jomacs on hand

JOMAC

INDUSTRIAL WORK GLOVES

Outwear ordinary work gloves by 900%

Plants in Philadelphia, Pa., and Warsaw, Ind.
IN CANADA: Safety Supply Company Toronto.

34 design ideas in Stainless Tubing from *Carpenter*

Your immediate problem may be a structural part for a machine, a component for an appliance, an architectural application to combine function with decorative value—but whatever it may be, there's an idea here for you.

You know about stainless; its excellent strength-for-weight ratio, its fine appearance, its stout resistance to corrosion and abrasion. You may not, however, know about special shapes of Carpenter Stainless Tubing and the fine opportunity they offer for real savings in translation of design to finished parts.

Carpenter offers *scores of stainless tubing shapes* in a wide range of dimensions, analyses and finishes as standard production. From them you may be able to select one that will do the job you have in mind. If, however, a "special" is required, *Carpenter can produce it* in any desired quantity—almost any type of finish.

Why not find out more about Carpenter Stainless Shaped Tubing and its possible place in your product designs. Call your nearest Carpenter distributor or branch office for "in-shop" consultation, or write direct to . . .

MEMBER

The Carpenter Steel Company,
Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Carpenter

Stainless Tubing & Pipe

No stoop, no squat, no oil can to lubricate 24 bearing surfaces on this connecting rod balancer

FARVAL—
Studies in Centralized Lubrication
No. 177

THIS machine balances the connecting rod used in the V-8 engine of a well-known American automobile. As shown in the photograph, 24 rotating and sliding bearing surfaces are lubricated by a Farval manually operated system of centralized lubrication.

Not only does adequate lubrication protect the bearing surfaces, keeping the balancer always in perfect working order, but it also saves oiling time, labor and lubricant. A few strokes of the pump handle periodically, by the regular machine attendant, delivers a measured amount of lubricant to each bearing surface. Failures just don't happen. Oil cans and grease buckets are eliminated and oilers can be put on other productive work.

Farval is the ideal system of centralized lubrication for industrial machinery and other equipment, especially where uninterrupted operation is important. Farval can be installed easily and inexpensively on almost any machine at any time —either by the builder when new or on an older machine by the owner. Experience shows that a Farval system, manual or automatic, usually pays for itself in a very short time in the savings it effects in bearing expense, labor, lubricant and elimination of interruptions to production.

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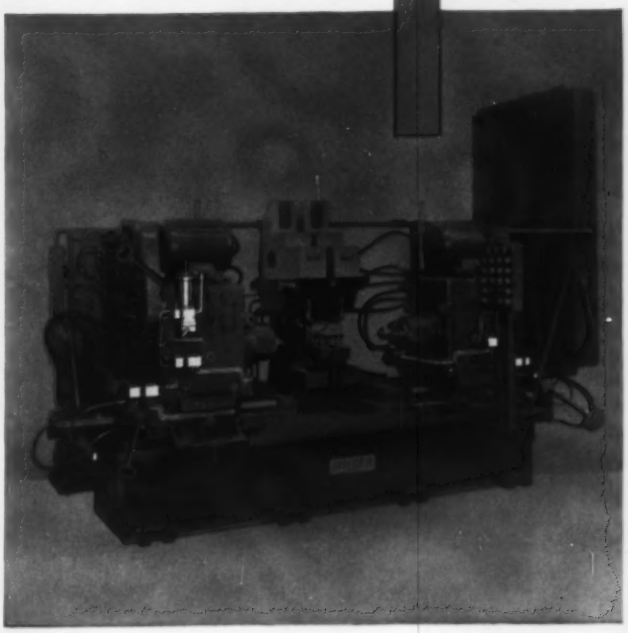
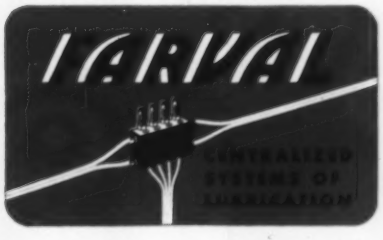
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

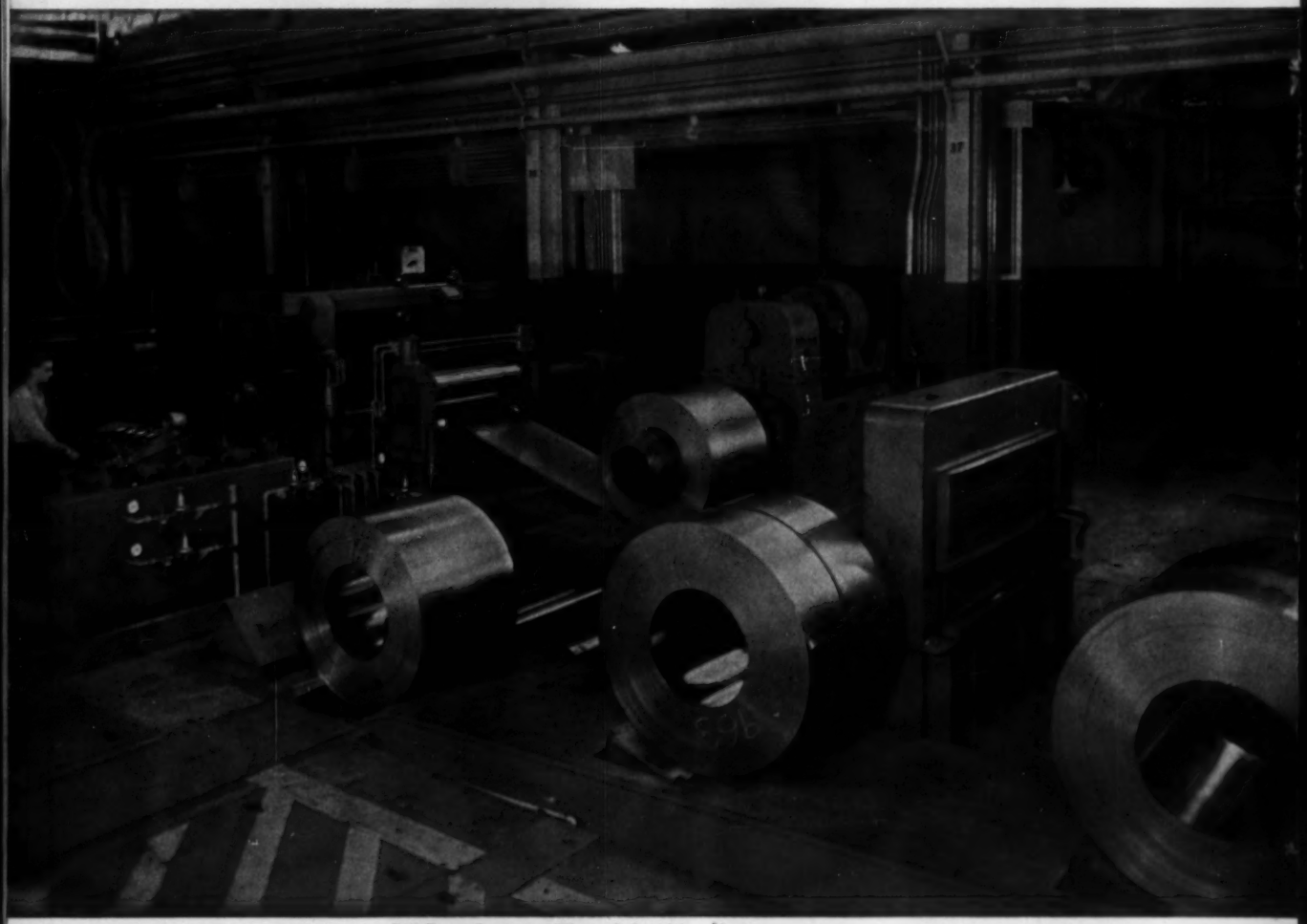


KEYS TO ADEQUATE LUBRICATION — Wherever you see the sign of Farval—the familiar central pumping station, dual lubricant lines and valve manifolds—you know a machine is being properly lubricated.

The connecting rod balancing machine shown above is fully automatic in all its phases, except for loading and unloading of the part, which is done by the machine operator who also operates the Farval pump once or twice per work shift. Photograph by courtesy of the builder—Snyder Tool & Engineering Co., Detroit, Mich.



THE BEGINNING OF BETTER
Galvanizing



Coil Entry Section — Wean Galvanizing Line

The WEAN ENGINEERING COMPANY · INC.
Warren, Ohio

Typical of Wean Advanced Engineering is this continuous hot dip galvanizing line that produces a vastly improved zinc coat steel at greatly increased speeds. Heavier coatings, tighter bonding and greater uniformity are now possible at reduced costs. It's this kind of never ending search for better ways of making better steel products that has established Wean as the nation's foremost designer and builder of sheet, tin and strip mill equipment.

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